EERING

PIT AND QUARRY

FEBRUARY 1949

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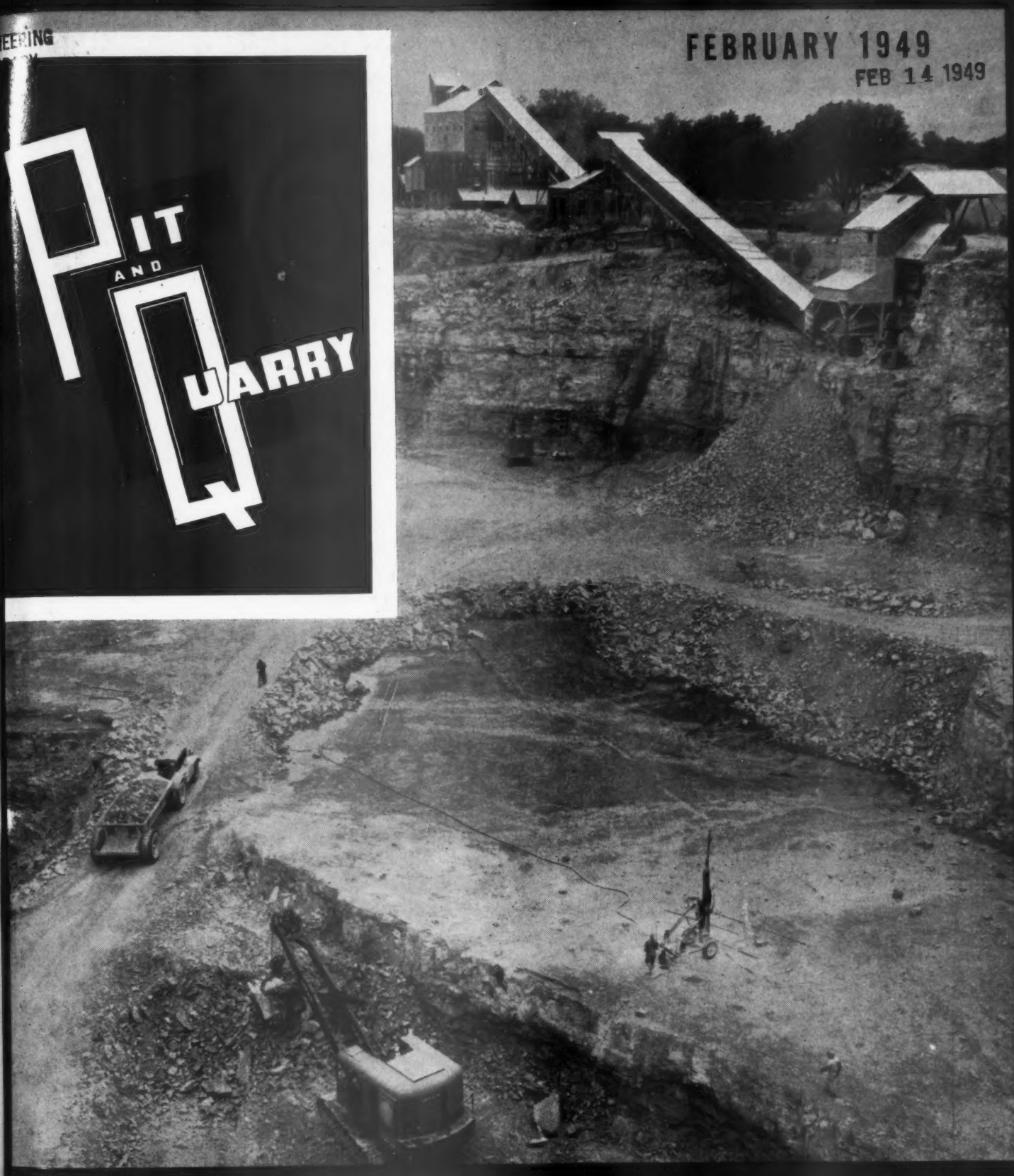

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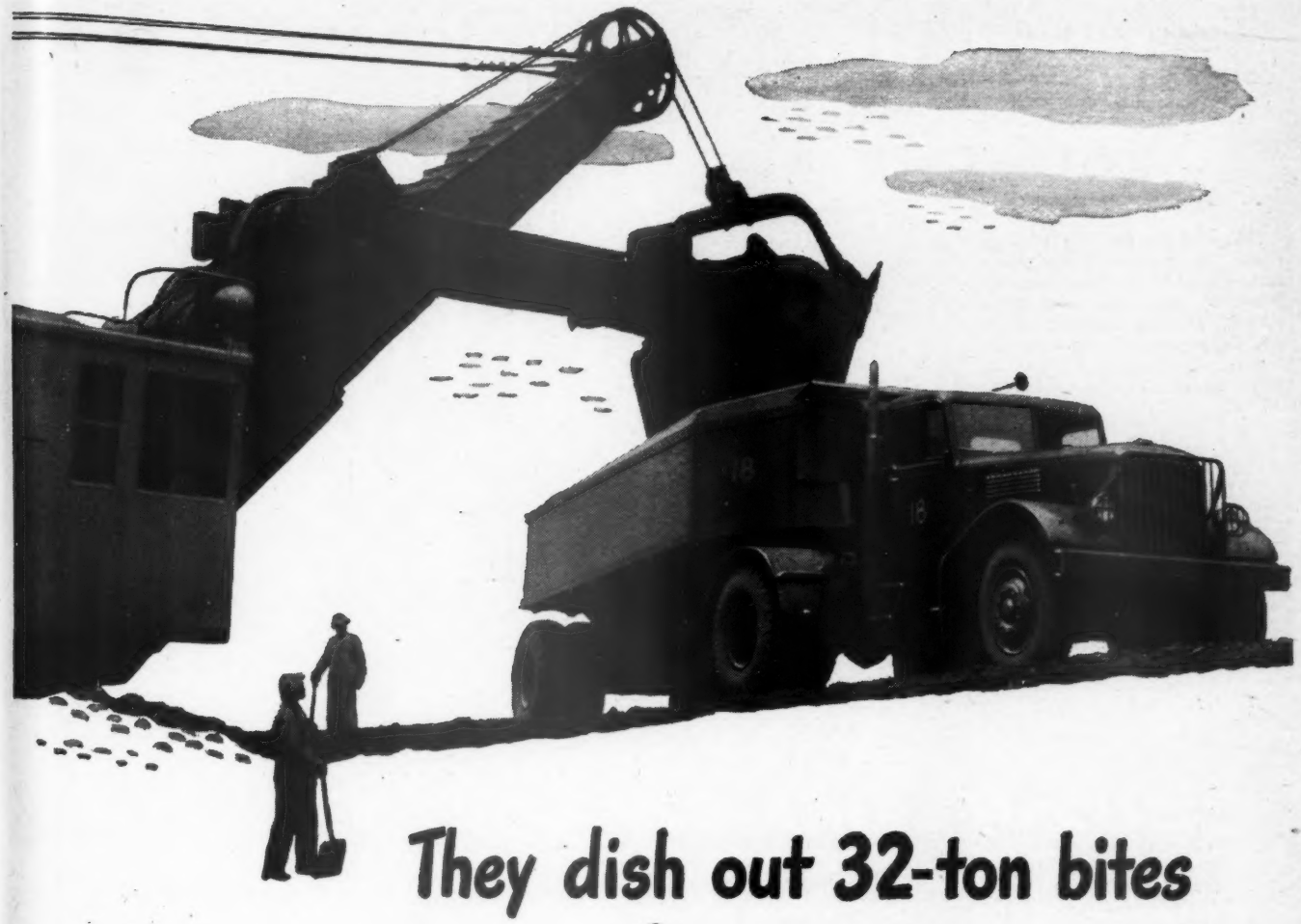

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That's why you see giant Internationals working here.

Their job is to keep coal scuttling, in 32-ton loads, from massive shovels to final processing. And how they do it!

If you think you see an application to *your* job, listen to this: International W models were originally developed to tote timber in rugged western areas. They are now being used in oil fields, mining, heavy construction and other operations where powerful, *specialized* trucks deliver advantages you can't get any other way.

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41
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PIT AND QUARRY

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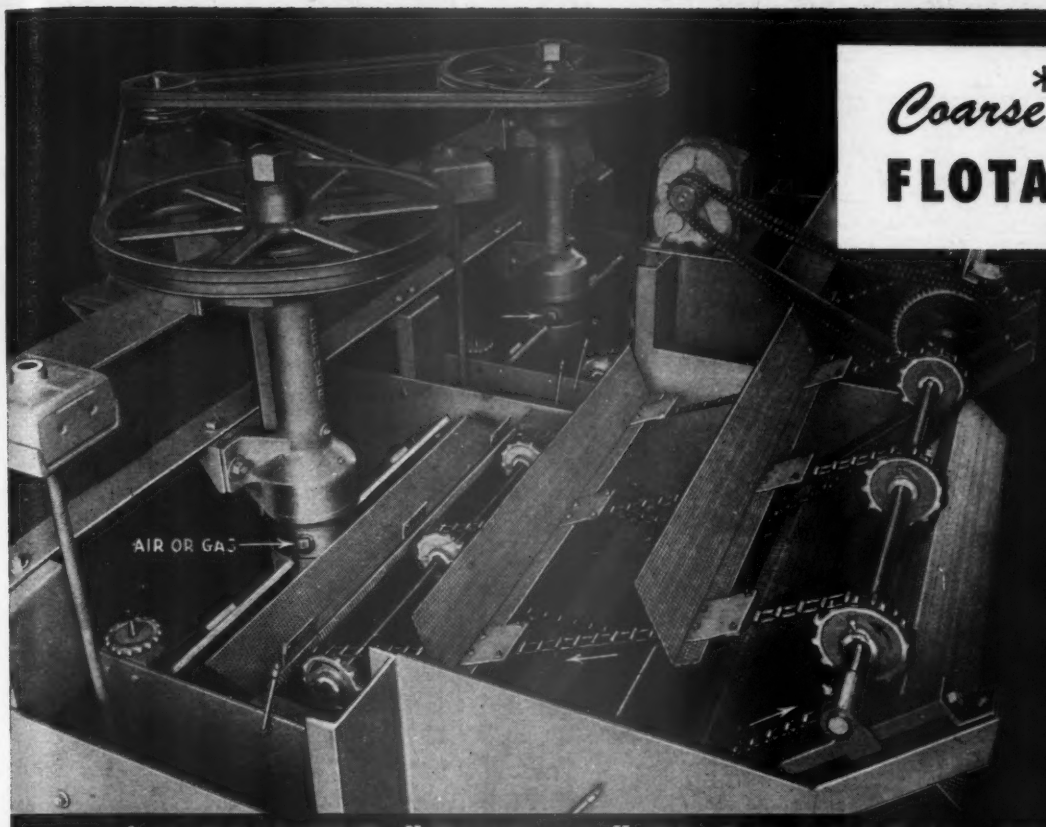

*Coarse** COAL FLOTATION

Working directly with the Bureau of Mines Coal Preparation Section, and with large coal companies engaged in solving the problem, Denver Flotation Engineers designed a Flotation Machine which does an effective job of coal cleaning as will be noted in the tabulations below from Bureau of Mines Report of Investigations 4306; July 1948.

Marketable results are obtained on varying types, grades and sizes of coal fractions:

with DENVER "SUB-A" FLOTATION MACHINES

PROBLEM • Treating coal fractions from 1/16"-0. Two objectives are sought—

1) *to save marketable grade of coal in these sizes and*

2) *eliminate stream pollution from wasted slurry water.*

These coal fractions cannot be satisfactorily cleaned by "gravity" methods. With flotation remaining as the most acceptable solution, a prime consideration is that the flotation machine used must be capable of handling both coarse and fine sizes effectively. The rapid rising, dense agglomerate type "matte" coal concentrate must be removed and dewatered in large volume.

SOLUTION • No commercial flotation machine can treat both coarse and fine sizes so effectively as the Denver "Sub-A." This selective feature plus its extreme mechanical and metallurgical flexibility makes it the logical choice for coal cleaning work.

Removal and dewatering of the dense agglomerated "matte" concentrate was accomplished with special "deep-digging" punched plate rakes which carry the 7"-8" coal matte up the spitzkasten allowing surplus water to drain back in the pulp through the perforated rakes. Further dewatering is carried out in a wedge bar compression screw conveyor. Surplus water returns via middling feed pipe to the Denver "Sub-A" Flotation cell for re-use, thus eliminating surplus slurry water.

	SCREEN SIZE, MESH	FEED		CLEANED COAL		REFUSE		DISTRIBUTION, %		Reagents, lbs. per ton feed
		Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Weight, percent	Ash, 1* percent	Cleaned Coal	Refuse	
MINE I *	10 to 14	18.8	11.9	23.0	6.2	9.1	31.6	77.6	22.4	Kerosene, 3.27
	14 to 35	51.4	19.1	56.0	7.6	31.9	65.3	80.1	19.9	B-23 Frother, 0.24
	35 to 100	23.3	40.3	17.0	13.4	35.6	81.8	60.7	39.3	Pine Oil, 0.11
	Through 100	6.5	58.3	4.0	19.3	23.4	84.0	39.7	60.3	
	Composite through 10	100.0	25.2	100.0	8.7	100.0	72.5	74.1	25.9	
MINE II *	10 to 35	64.2	10.5	58.2	3.4	54.0	50.7	85.0	15.0	Kerosene, 3.46
	35 to 100	22.6	10.5	26.9	4.6	22.2	66.2	90.4	9.6	B-23 Frother, 0.26
	Through 100	13.2	12.8	14.9	6.3	23.8	64.8	88.9	11.1	Pine Oil, 0.20
	Composite through 10	100.0	10.8	100.0	4.2	100.0	57.5	87.6	12.4	

1*—Moisture free basis

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editorial

Heavy Scrap Urgently Needed

THERE has been much confusion in recent months about the steel scrap situation and the importance of increasing the amount available to the steel industry. The situation has now been clarified by an announcement from Secretary of Commerce Charles Sawyer to the effect that present inventories are not adequate when full consideration is given to the demands of our domestic economy, foreign aid programs and military requirements. Said Secretary Sawyer, "Although present inventories are 1,000,000 tons higher today than they were a year ago, daily scrap consumption is also higher. It is estimated by industry that steel production in 1949 will be 3,500,000 tons higher than the 1948 record production of 88,500,000 tons.

"Current inventories of purchased and home scrap are estimated at about 5,000,000 tons and, at a scrap consumption rate running approximately 2,500,000 tons a month, these inventories represent no more than a 60-day supply. Such a supply would be inadequate in the event of an emergency."

THERE have been rumors to the effect that steel scrap shipments from Germany have been cancelled. That these are unfounded is evident from a recent release of the American Iron and Steel Institute in which Robert W. Wolcott, president of Lukens Steel Co., says, "A survey of major steel companies shows that no important cancellation of contracts for shipment of German scrap have occurred." He further stated that the steel companies will need all the heavy melted scrap they can possibly obtain.

To the producer of nonmetallic minerals the scrap problem is not just one of national security and general business prosperity; it affects his business directly in countless ways. Most important perhaps is the fact that he still cannot get all the heavy machinery he needs to expand his production to meet the growing demands, or to replace existing obsolete or worn out machinery for economical operation. There still exists a shortage of freight cars which not only delays the receipt of needed coal, fuel oil or raw materials, but also holds up shipments of finished products. Further, the actual demand for nonmetallic minerals is being held down by the shortage of steel for direct use in various types of construction, by the shortage of machinery for construction and for use in factories, and by the fact that the industries buying non-metals are similarly handicapped.

Because of the seriousness of the situation a drive was started by the government to bring out the needed scrap. This drive is concentrating on heavy iron and steel scrap because it will produce more and better steel and castings more quickly than light scrap. In 1948 scrap constituted more than half of every article made of iron and steel; the average was 53.3 percent scrap and 46.7 percent pig iron. Heavy scrap is in short supply partly because during the war 123,000,000 tons of steel and steel products were shipped overseas, and only a fraction of this will ever come back. Heavy war production also used up enormous tonnages of scrap material.

The drive seeks to obtain heavy scrap from industries, farms, and auto wrecking yards. Householders will not be asked to participate, since they yield chiefly light scrap.

This iron and steel heavy scrap drive dates back to April 3, 1948, when the President asked the secretary of commerce to coordinate and assume responsibility for the government scrap program. A committee was appointed which directed its first efforts toward obtaining heavy scrap from foreign sources, particularly Germany and Japan. These efforts did not fully meet the growing needs of the steel industry; so in September, 1948, Secretary of Commerce Sawyer took steps again to tap the domestic sources which had suppied so much scrap during the reconversion period.

Industry and farmers were appealed to directly and through trade associations and other means to sell their heavy scrap through normal trade channels. All these efforts have helped to increase the flow of scrap, but the amount coming in is still not enough to bring the production of steel to its absolute peak, much less to permit the building up of a security stockpile.

Early in the campaign the Advertising Council was asked for its support by Secretary Sawyer and this was pledged. The Council is a non-profit organization representing all public service campaigns such as those for U. S. Savings Bonds, Better Schools, Stop Accidents, Fight Tuberculosis, Forest Fire Prevention, Red Cross, C.A.R.E., Community Chests of America, etc. Considering the business and trade press of the country to be of primary importance in this drive the Council turned the program over to its Business Paper Advisory Committee, which unanimously voted to carry on the campaign. The Council also appointed the James Thomas Chirurg Company, Inc., New York City, volunteer advertising agency for the campaign. This company prepared all of the Council's advertisements and advertising materials for the drive.

BUSINESS and trade papers were asked to cooperate with the scrap drive by contributing space for a series of advertisements and also by cooperating editorially. Believing this drive to be of utmost importance to the national security, and also beneficial to general business conditions and to the nonmetallic minerals industries and manufacturers supplying machinery and supplies to them, PIT AND QUARRY is cooperating wholeheartedly. In this issue appears the first of the series of advertisements; others will follow in succeeding issues. Further editorial comments and information will be published as the occasion arises.

The nonmetallic minerals industries are among the biggest users of heavy machinery. They wear out equipment faster than nearly any other industry. They can contribute much and in consequence benefit even more by cooperating to the fullest extent. (Incidentally, the prices now being paid for scrap are near a record high level.

Walter E. Trautfer

news of the industry

PIT AND QUARRY

Dr. L. E. Young Elected President of A.I.M.E. To Succeed W. E. Wrather

Dr. L. E. Young was elected president of the American Institute of Mining and Metallurgical Engineers late in 1948. Dr. Young succeeds W. E. Wrather of Washington, D. C.

In his work since college years at Pennsylvania State College Dr. Young has touched nearly every phase of the mining industry; and for several years he was active as an instructor in colleges of mining. He has been a consulting mining engineer since 1939, maintaining offices in Pittsburgh. Dr. Young has also contributed to the technical literature of the mining industry, having authored a volume on mine taxation in the United States and numerous papers on a variety of related subjects.

A member of A.I.M.E. since 1901, Dr. Young served as a director from 1937 to 1942 and as vice-president from 1942 to 1945.

Producers File Suit Against County Crusher Business

Virgil Johnson and Emil Johnson, Jr., sand and gravel dealers at Beatrice, Neb., have filed suit in district court at Beatrice asking that Gage County be required to go out of the crushed rock business. The plaintiffs filed the the suit in behalf of all "citizens and taxpayers of Gage County," as well as themselves.

The petition states that the county operates a rock crusher and a quarry for the purpose of selling crushed rock in competition with private business. It further contends that the county is "illegally disposing of public money and illegally creating debts and obligations that must be paid by taxation."

Indiana Mineral Aggregates Producers to Hold Meeting

According to an announcement released by Ralph E. Simpson, engineer-director of the Indiana Mineral Aggregate Assn., Inc., that organization will hold its annual meeting at the Claypool Hotel, Indianapolis, on March 17-18, 1949.

This will be the third such meeting since the association's reactivation in 1947.

On November 24 a fire of undetermined origin gutted the plant of the Haliburton Oil and Cement Company at Charleston, W. Va. Sam Corey, owner of the building, estimated the damage to his property at $4,000. The extent of damage to equipment was not cited. Earl Garretson, plant manager, was hospitalized with a broken arm after a fall at the scene of the blaze.

Superior Cement, Southern Quarries & Contracting Co. N.Y. Coal Sales Divisions

Two Ohio concerns, the Superior Cement Corporation and the Southern Quarries and Contracting Company, both subsidiaries of the New York Coal Sales Co., recently liquidated as separate corporations and became divisions of the parent company. Superior's plant is at Superior, O., and its principal offices are at Portsmouth, O. Southern Quarries operates a quarry near Peebles, O., and maintains offices in Columbus.

According to Edwin H. Davis, president of New York Coal Sales, conversion of the subsidiaries to division status involves no changes in personnel management, and operating and sales policies continue as in the past.

Divisions of the parent company now include the following: Superior Cement Division, which will continue production of Superior cement (1,000,000 bbls. annually) and Wifco mortar at the Lawrence County plant; Southern Quarries and Contracting Division; Plum Run Stone Division, operating a quarry near Peebles for the production of agricultural limestone, rock dust for coal mine use, etc.; Basic Construction Materials Division, operating a plant at Chillicothe, O., for the production of ready-mixed concrete, concrete block, etc.; Southern Orchards Division; and Coal Sales Division.

Coming Events

February 7-9, 1949—New York. Annual convention, National Crushed Stone Association, Hotel New Yorker.

February 13-17, 1949—San Francisco. Annual meeting of American Institute of Mining and Metallurgical Engineers, Fairmont Hotel.

February 14-17, 1949—New York. 33rd annual convention, National Sand and Gravel Association, Hotel New Yorker.

February 14-17, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

February 21-22, 1949—Chicago. Annual convention, Agricultural Limestone Institute, Edgewater Beach Hotel.

February 23-25, 1949—New York. 45th annual convention, American Concrete Institute, Hotel Pennsylvania.

February 28-March 4, 1949—Chicago. Spring meeting and Committee Week, American Society for Testing Materials, Edgewater Beach Hotel.

May 5-7, 1949—Hot Springs. Annual convention, National Lime Association, The Homestead.

May 11-13, 1949—Hot Springs. Annual meeting, National Industrial Sand Association, The Homestead.

June 27-July 1, 1949—Atlantic City. Fifty-second annual meeting, American Society for Testing Materials, Hotel Chalfonte-Haddon Hall.

Report Dollar Volume Of '48 Building Contracts Tops $9,000,000,000 Mark

Building and engineering contracts in unprecedented dollar volume were awarded in the 37 states east of the Rocky Mountains last year, it was reported by F. W. Dodge Corporation.

Contracts awarded aggregated $9,429,618,000 to top the 1947 volume by 22 percent and to exceed by 14 percent the previous record of $8,255,061,000, set in 1942 when the war construction program was at its peak.

"Nonessential" classes showing the greatest gains, and the percentage increases over 1947, were as follows: commercial building, 25 percent; educational and science building, 85 percent; hospital and institutional building, 111 percent; religious building, 109 percent; social and recreational building, 90 percent.

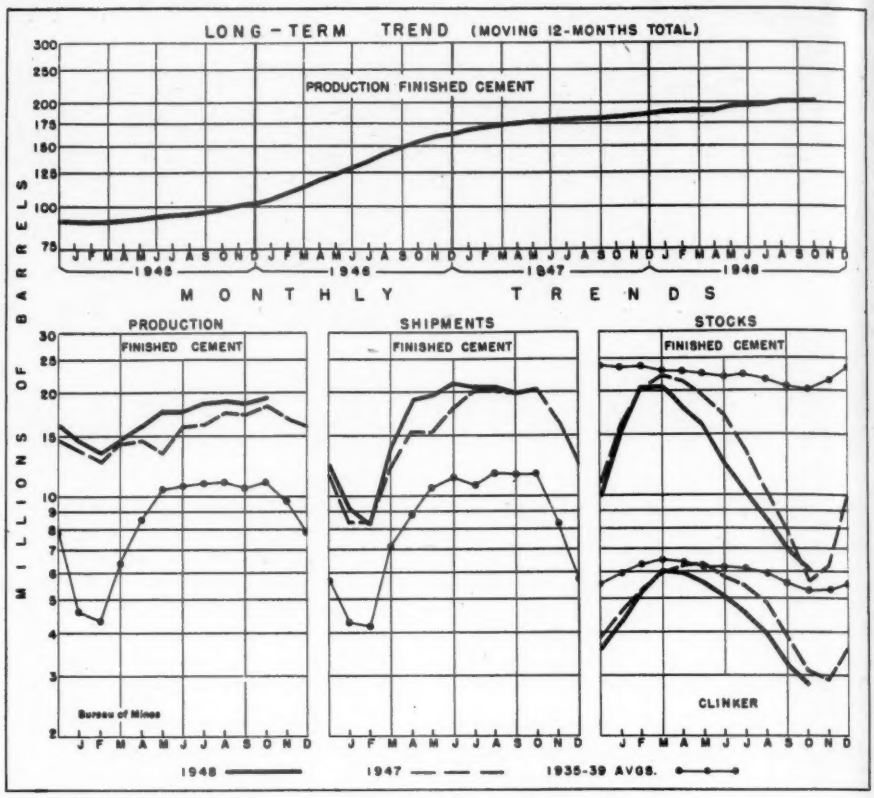
Nonresidential building contracts last year totaled $3,666,442,000 in the 37 states covered by the Dodge field organization. This total indicated a 35 percent increase in such contract commitments over the previous year. In the nonresidential group, only one major classification of building fell off from the 1947 level, namely, manufacturing building, which was down 11 percent.

Residential building awards increased in dollar volume 14 percent over 1947, with a total of $3,608,015,000, which also set a new record for this classification. Of the major classifications of residential building one only, namely, apartment houses, showed a smaller dollar volume than in the previous year. The decline was 8 percent.

Heavy engineering awards in the "eastern" states totaled $2,155,161,000 during 1948 to show a 14 percent increase over the previous year.

Public-account projects figured heavily in last year's record-breaking volume. In fact, projects classified as publicly owned accounted for 33 percent of the dollar volume of all building and engineering contracts combined in 1948, the aggregate of all public-account projects being $3,107,012,000.

The record-breaking volume was shared by all 15 of the major marketing areas in the Dodge network, with the highest increases reported for upstate New York, where an unusually large volume of heavy engineering works was reported.



Summary—The portland cement industry produced 19,349,000 barrels of finished cement in October, 1948, as reported to the U. S. Bureau of Mines. This figure is 6 percent greater than that reported for October, 1947. Mill shipments totaled 20,324,000 barrels, a decrease of 1 percent below the October, 1947, figure, while stocks of 6,086,000 barrels on October 31 were 7 percent above the October, 1947, totals. Clinker output in October, 1948, amounted to 19,315,000 barrels, representing an increase of 10 percent over the corresponding month of the previous year.

Production—The output of 19,349,000 barrels of finished cement in October, 1948, came from 147 plants located in 34 states and Puerto Rico. In the same month of 1947, 18,300,000 barrels were produced in 147 plants. Clinker production increased 10 percent over the October, 1947, figure.

Shipments—Mill shipments of 20,324,000 barrels decreased 1 percent below the October, 1947, figure. The demand for cement in October, 1948, as indicated by mill shipments, increased somewhat over that of the previous month (September, 1948)—19,938,000 barrels. Shipments were higher in 10 districts and lower in 9, than those reported in October, 1947. The changes range from a decrease of 19 percent in the Illinois district to an increase of 32 percent in the Colorado, Wyoming, Montana, Utah, and Idaho district. An increase of 32 percent is also indicated in the Puerto Rican district for October, 1948.

Plant Managers Convene at National Gypsum Offices

Managers of National Gypsum Company's plants and operations from all parts of the country met in the company headquarters at Buffalo, N. Y., for an entire week of conferences with executives, December 13-17, 1948.

"We are bringing our key production men to Buffalo to review our recently completed expansion program and to develop plans for getting peak production from our new capacities during 1949," President Melvin H. Baker declared.

Lewis R. Sanderson, vice-president in charge of operations, presided at the general meeting opening the conference. Group meetings on technical problems were held during the remainder of the week.

Ziegler, Dohrenwend Win Midwest Research Promotions

Officers of the Midwest Research Institute announce the appointment of Dr. George E. Ziegler as director and Dr. Clayton O. Dohrenwend as assistant director of the institute. The announcement followed action taken at the annual trustees' meeting held December 6, 1948, in Kansas City, Mo.

Dr. Ziegler has devoted the past ten years to solving the problems of industry through the practical application of the fundamental sciences to the problems of industry. He came to the institute at the time of its inception in 1945 as executive scientist, having previously been associated with Armour Research Foundation in Chicago. He has been acting chief administrator of the Institute since the resignation of Harold Vagtborg.

Dr. Dohrenwend, appointed to the newly established position of assistant director, has been a research consultant since coming to the institute in July, 1946. He was formerly associated with Illinois Institute of Technology as director of the Mechanics Department.

Schedule of Freight Hikes Published by Union Pacific R. R.

For the use of shippers and the convenience of industry in general, the freight traffic department of the Union Pacific Railroad has issued a 62-page booklet of increased rates and charges.

The unofficial booklet is based on tariffs of increased rates and charges No. X-162-A and No. X-166-B.

Feature of the publication is a map of the United States showing boundary lines of various increase territories.

A copy may be obtained free of charge by writing to the freight traffic department, Union Pacific Railroad, Fifteenth and Dodge Streets, Omaha.

Dewey's Modernization At Davenport Expected to Boost Output 40 Percent

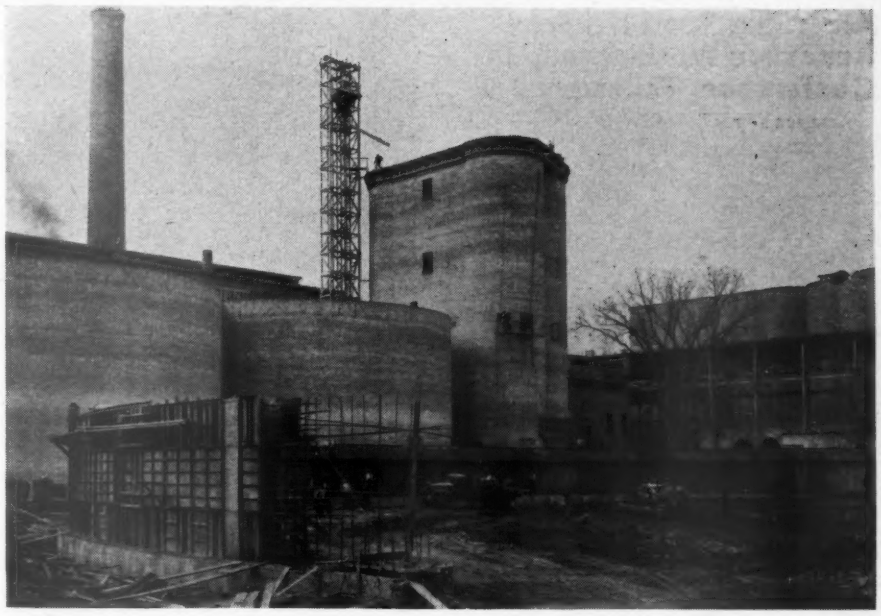
New facilities now under construction at the Dewey Cement Company plant near Davenport, Ia., will up production approximately 40 percent, according to F. B. Hunt, plant superintendent.

One of the largest Dorr thickeners in the industry is among the additions now being put in for the firm by Crosby Construction Company of Chicago. Other new construction includes four correction tanks 20 ft. in diameter and 42 ft. deep, and two storage tanks of 65-ft. diameter, 25-ft. depth, each big enough to hold a day's production of slurry.

The cement firm speeded the expansion program with its diesel crawler tractor, an International TD-18 equipped with a Bucyrus-Erie "Bullgrader." One of the tasks handled by the TD-18 was grading the floor of the huge thickener tank. The tank, 225 ft. in diameter, will have a 9-ft. wall to support the single track on which the end of the revolving paddle arm rides. The tank floor was brought to a grade of 17 percent within a radius of 80 ft. from the center; and 8½ percent from that point to the wall.

Slurry will enter the tank through a pipe on a fixed overhead bridge and will be distributed along the revolving paddle arm. It will be pumped out to the correction tanks through an underground pipe at the center. Water content of the slurry will be 85 percent entering the thickener; 35 percent leaving.

In the correction tank, the slurry will be scientifically adjusted to the righ composition. It will then be drawn off by gravity flow to the storage tanks.



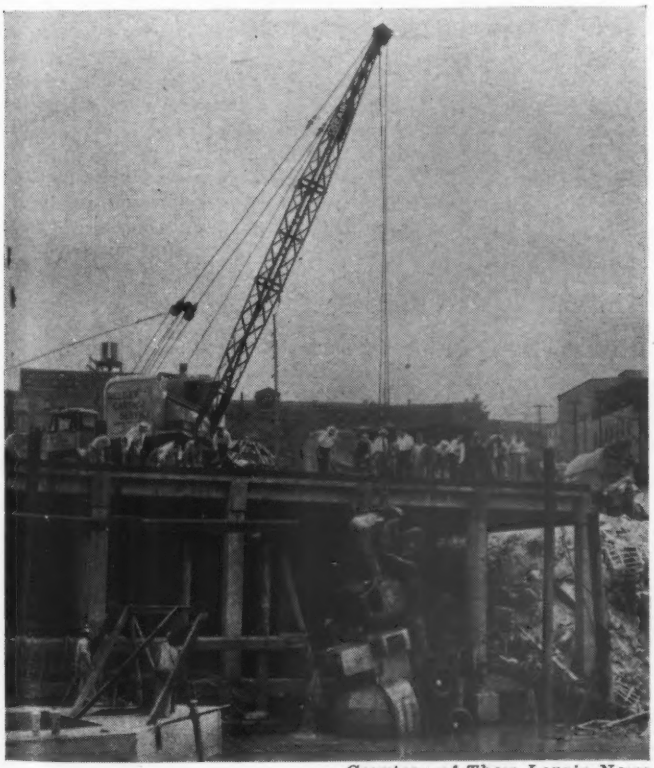
• A view of the Dewey Portland Cement Company's new facilities at Davenport, Ia., now under construction. In the foreground is the Dorr thickener, 225 ft. in diameter.

Palm Springers Talk Back in Guiberson Cement Plant Feud

They're still at it in Palm Springs, Calif. Riverside County board of supervisors are continuing their fight to block the erection of S. A. Guiberson's cement plant by filing an answer to the federal court suit brought against them by the producer. The supervisors denied all statements made by Mr. Guiberson in his suit to prevent the county from interfering with his building plans.

In the event that Mr. Guiberson fails to contest the county's "answer", a court hearing will be held. Meanwhile the county planning commission is speeding up plans for a proposed county-wide zoning ordinance to outlaw the Guiberson plant, a move which has already met with some opposition.

Why are Mr. Guiberson's intentions to build a plant unpopular? Palm Springs residents say that a cement mill would create a dangerous dust nuisance.



Courtesy of Thew Lorain News

• We don't know what the bait was, but the tackle was definitely of the heavy-duty variety—a Lorain MC-414 Moto-Crane. The catch: a transit-mixer owned by the Stewart Material Co. of Kansas City, Mo.; the fishing pool: the Missouri River.

Approximately 400 workers in the Dallas and Houston, Tex., plants of the Lone Star Cement Corporation were given a general wage boost of 12 cents per hour after securing a new wage contract through representatives of the C.I.O. Stoneworkers Union.

The one-year contract, retroactive to December 1, 1948, provides employes having a service record of three years a two-week vacation with pay, as against an old provision requiring five years of service for the two-week holiday.

National Gypsum Company Establishes New District

On January 1, National Gypsum Company, leading producer of building materials, began operation of a new sales district, with headquarters in Pittsburgh, Pa., according to John W. Brown, general sales manager.

William M. Ritchey, formerly manager of the Cincinnati district, has been named to head the new office, which will be the company's sixteenth. Walter J. Stroud, who has been supervisor of Gold Bond Rock Wool Applicators in the Midwest, will succeed Mr. Ritchey in Cincinnati. In announcing the new district, Mr. Brown said it was established because of the rapid growth of the company's business in western Pennsylvania, northern West Virginia, and eastern Ohio.

New Pennsalt Subsidiary to Handle Foreign Activities

Leonard T. Beale, president of Pennsylvania Salt Manufacturing Company, has announced the organization of Pennsalt International Corporation, a subsidiary, which will take over the varied foreign interests of the parent company. Richard L. Davies is president of the new firm and John H. S. Barr is vice-president. Mr. Davies is assistant to the president of the parent company, for which Mr. Barr has been export manager since 1944.

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Contracts awarded aggregated $9,429,618,000 to top the 1947 volume by 22 percent and to exceed by 14 percent the previous record of $8,255,061,000, set in 1942 when the war construction program was at its peak.

"Nonessential" classes showing the greatest gains, and the percentage increases over 1947, were as follows: commercial building, 25 percent; educational and science building, 85 percent; hospital and institutional building, 111 percent; religious building, 109 percent; social and recreational building, 90 percent.

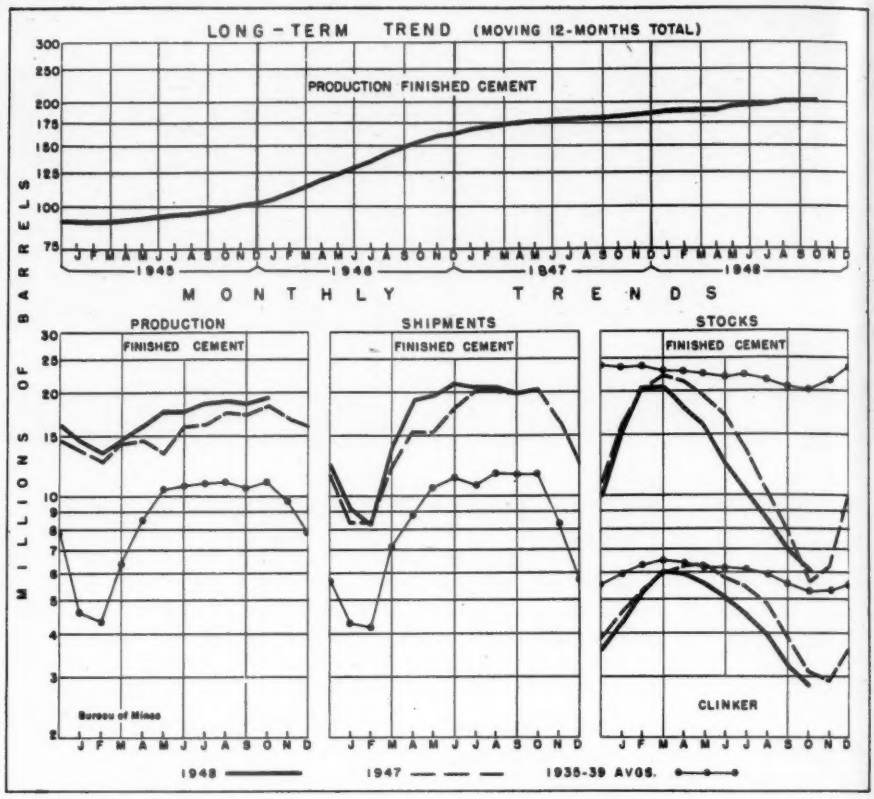
Nonresidential building contracts last year totaled $3,666,442,000 in the 37 states covered by the Dodge field organization. This total indicated a 35 percent increase in such contract commitments over the previous year. In the nonresidential group, only one major classification of building fell off from the 1947 level, namely, manufacturing building, which was down 11 percent.

Residential building awards increased in dollar volume 14 percent over 1947, with a total of $3,608,015,000, which also set a new record for this classification. Of the major classifications of residential building one only, namely, apartment houses, showed a smaller dollar volume than in the previous year. The decline was 8 percent.

Heavy engineering awards in the "eastern" states totaled $2,155,161,000 during 1948 to show a 14 percent increase over the previous year.

Public-account projects figured heavily in last year's record-breaking volume. In fact, projects classified as publicly owned accounted for 33 percent of the dollar volume of all building and engineering contracts combined in 1948, the aggregate of all public-account projects being $3,107,012,000.

The record-breaking volume was shared by all 15 of the major marketing areas in the Dodge network, with the highest increases reported for upstate New York, where an unusually large volume of heavy engineering works was reported.



Summary—The portland cement industry produced 19,349,000 barrels of finished cement in October, 1948, as reported to the U. S. Bureau of Mines. This figure is 6 percent greater than that reported for October, 1947. Mill shipments totaled 20,324,000 barrels, a decrease of 1 percent below the October, 1947, figure, while stocks of 6,086,000 barrels on October 31 were 7 percent above the October, 1947, totals. Clinker output in October, 1948, amounted to 19,315,000 barrels, representing an increase of 10 percent over the corresponding month of the previous year.

Production—The output of 19,349,000 barrels of finished cement in October, 1948, came from 147 plants located in 34 states and Puerto Rico. In the same month of 1947, 18,300,000 barrels were produced in 147 plants. Clinker production increased 10 percent over the October, 1947, figure.

Shipments—Mill shipments of 20,324,000 barrels decreased 1 percent below the October, 1947, figure. The demand for cement in October, 1948, as indicated by mill shipments, increased somewhat over that of the previous month (September, 1948)—19,938,000 barrels. Shipments were higher in 10 districts and lower in 9, than those reported in October, 1947. The changes range from a decrease of 19 percent in the Illinois district to an increase of 32 percent in the Colorado, Wyoming, Montana, Utah, and Idaho district. An increase of 32 percent is also indicated in the Puerto Rican district for October, 1948.

Plant Managers Convene at National Gypsum Offices

Managers of National Gypsum Company's plants and operations from all parts of the country met in the company headquarters at Buffalo, N. Y., for an entire week of conferences with executives, December 13-17, 1948.

"We are bringing our key production men to Buffalo to review our recently completed expansion program and to develop plans for getting peak production from our new capacities during 1949," President Melvin H. Baker declared.

Lewis R. Sanderson, vice-president in charge of operations, presided at the general meeting opening the conference. Group meetings on technical problems were held during the remainder of the week.

Ziegler, Dohrenwend Win Midwest Research Promotions

Officers of the Midwest Research Institute announce the appointment of Dr. George E. Ziegler as director and Dr. Clayton O. Dohrenwend as assistant director of the institute. The announcement followed action taken at the annual trustees' meeting held December 6, 1948, in Kansas City, Mo.

Dr. Ziegler has devoted the past ten years to solving the problems of industry through the practical application of the fundamental sciences to the problems of industry. He came to the institute at the time of its inception in 1945 as executive scientist, having previously been associated with Armour Research Foundation in Chicago. He has been acting chief administrator of the Institute since the resignation of Harold Vagtborg.

Dr. Dohrenwend, appointed to the newly established position of assistant director, has been a research consultant since coming to the institute in July, 1946. He was formerly associated with Illinois Institute of Technology as director of the Mechanics Department.

Schedule of Freight Hikes Published by Union Pacific R. R.

For the use of shippers and the convenience of industry in general, the freight traffic department of the Union Pacific Railroad has issued a 62-page booklet of increased rates and charges.

The unofficial booklet is based on tariffs of increased rates and charges No. X-162-A and No. X-166-B.

Feature of the publication is a map of the United States showing boundary lines of various increase territories.

A copy may be obtained free of charge by writing to the freight traffic department, Union Pacific Railroad, Fifteenth and Dodge Streets, Omaha.

Dewey's Modernization At Davenport Expected to Boost Output 40 Percent

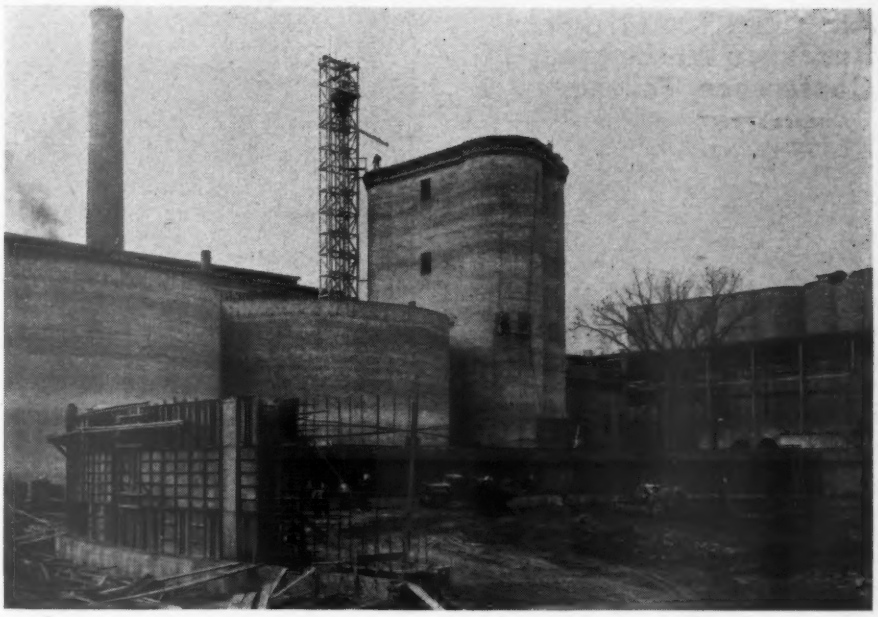
New facilities now under construction at the Dewey Cement Company plant near Davenport, Ia., will up production approximately 40 percent, according to F. B. Hunt, plant superintendent.

One of the largest Dorr thickeners in the industry is among the additions now being put in for the firm by Crosby Construction Company of Chicago. Other new construction includes four correction tanks 20 ft. in diameter and 42 ft. deep, and two storage tanks of 65-ft. diameter, 25-ft. depth, each big enough to hold a day's production of slurry.

The cement firm speeded the expansion program with its diesel crawler tractor, an International TD-18 equipped with a Bucyrus-Erie "Bullgrader." One of the tasks handled by the TD-18 was grading the floor of the huge thickener tank. The tank, 225 ft. in diameter, will have a 9-ft. wall to support the single track on which the end of the revolving paddle arm rides. The tank floor was brought to a grade of 17 percent within a radius of 80 ft. from the center; and 8½ percent from that point to the wall.

Slurry will enter the tank through a pipe on a fixed overhead bridge and will be distributed along the revolving paddle arm. It will be pumped out to the correction tanks through an underground pipe at the center. Water content of the slurry will be 85 percent entering the thickener; 35 percent leaving.

In the correction tank, the slurry will be scientifically adjusted to the right composition. It will then be drawn off by gravity flow to the storage tanks.



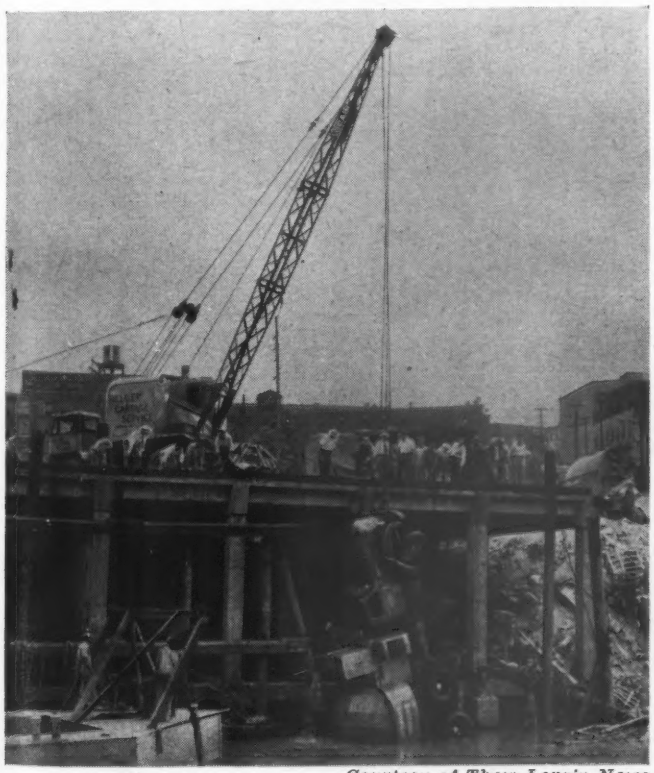
• A view of the Dewey Portland Cement Company's new facilities at Davenport, Ia., now under construction. In the foreground is the Dorr thickener, 225 ft. in diameter.

Palm Springers Talk Back in Guiberson Cement Plant Feud

They're still at it in Palm Springs, Calif. Riverside County board of supervisors are continuing their fight to block the erection of S. A. Guiberson's cement plant by filing an answer to the federal court suit brought against them by the producer. The supervisors denied all statements made by Mr. Guiberson in his suit to prevent the county from interfering with his building plans.

In the event that Mr. Guiberson fails to contest the county's "answer", a court hearing will be held. Meanwhile the county planning commission is speeding up plans for a proposed county-wide zoning ordinance to outlaw the Guiberson plant, a move which has already met with some opposition.

Why are Mr. Guiberson's intentions to build a plant unpopular? Palm Springs residents say that a cement mill would create a dangerous dust nuisance.



Courtesy of Thew Lorain News

• We don't know what the bait was, but the tackle was definitely of the heavy-duty variety—a Lorain MC-414 Moto-Crane. The catch: a transit-mixer owned by the Stewart Material Co. of Kansas City, Mo.; the fishing pool: the Missouri River.

Approximately 400 workers in the Dallas and Houston, Tex., plants of the Lone Star Cement Corporation were given a general wage boost of 12 cents per hour after securing a new wage contract through representatives of the C.I.O. Stoneworkers Union.

The one-year contract, retroactive to December 1, 1948, provides employes having a service record of three years a two-week vacation with pay, as against an old provision requiring five years of service for the two-week holiday.

National Gypsum Company Establishes New District

On January 1, National Gypsum Company, leading producer of building materials, began operation of a new sales district, with headquarters in Pittsburgh, Pa., according to John W. Brown, general sales manager.

William M. Ritchey, formerly manager of the Cincinnati district, has been named to head the new office, which will be the company's sixteenth. Walter J. Stroud, who has been supervisor of Gold Bond Rock Wool Applicators in the Midwest, will succeed Mr. Ritchey in Cincinnati. In announcing the new district, Mr. Brown said it was established because of the rapid growth of the company's business in western Pennsylvania, northern West Virginia, and eastern Ohio.

New Pennsalt Subsidiary to Handle Foreign Activities

Leonard T. Beale, president of Pennsylvania Salt Manufacturing Company, has announced the organization of Pennsalt International Corporation, a subsidiary, which will take over the varied foreign interests of the parent company. Richard L. Davies is president of the new firm and John H. S. Barr is vice-president. Mr. Davies is assistant to the president of the parent company, for which Mr. Barr has been export manager since 1944.

American Road Builders Announce Washington, D.C. Conference, February 7-9

America's road and airport builders will have an opportunity to be brought up to date on construction methods, practices, policies and equipment developed during 1948 at the conference and 46th annual meeting of the American Road Builders' Association to be held in Washington, D. C., February 7-9. Sessions will be conducted at the Mayflower, Statler and Willard Hotels.

Many of A.R.B.A.'s 43 technical committees will meet at this time, and a number will make reports. These reports, compiled by the nation's leading highway engineers, scientists, technicians and administrators, are regarded as authoritative throughout the industry, and serve as textbooks in colleges of civil engineering.

Seven A.R.B.A. divisions will hold their annual meetings to elect and install officers for 1949 at this conference. The American Road Builders' Association and the American Institute of Local Highway Administration, affiliated with the county officials, will also meet at this time.

Lime Firm Files Injunction In Suit Against Village

Genesee Lime Products, Inc., which a month ago filed claims against the village of Scotsville, N. Y., for $525,000 damages for flooding of the firm's marl beds, has instituted a Supreme Court injunction suit against the village.

Also named defendants in the injunction suit are Lawton P. Palmer and his wife, Mrs. Ruth R. Palmer, owners of land near the marl beds. The village on November 16, 1948, launched a condemnation proceeding against the Palmers to acquire a 30-foot wide strip of land, 15 feet on each side of a ditch. Under the condemnation order signed by Supreme Court Justice John Van Voorhis, the village immediately entered into possession and filled in with gravel, logs and debris 170 feet of the ditch on the Palmer land, flooding the nearby marl beds, according to the lime firm.

Genesee Lime Products Inc., for more than two years has been mining marl, a limelike deposit used as a fertilizer, on land it leases several hundred feet west of the springs and catch basin which supply the 1,000 villagers with potable water. Village officials maintain they had to build a dam on the condemned property to prevent exhaustion of the community's water supply. They claim deepening of the ditch by the lime firm in 1946 diverted the flow of water and caused village faucets to run dry several times last summer and fall.

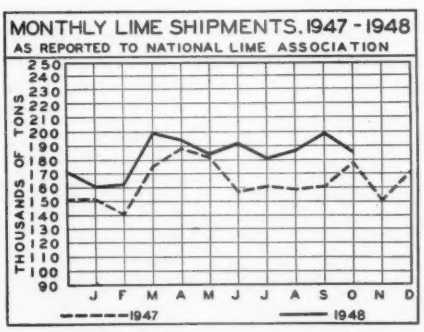
The lime firm alleges it obtained from the Palmers legal rights to drain its lands through the ditch without interference by the Palmers or their "successors in interest". Also alleging it has other riparian and easement rights, the firm seeks an injunction to prevent such interference.

• One of the scenes from "White Magic", new full color-sound movie produced by the Jerry Fairbanks Studio, Hollywood, a part of the United States Gypsum Company's motion picture program service. Here, in his cocky, happy-go-lucky manner, Jaunty the Flame, star and narrator of "White Magic", tells his little flame pals, "There's nothing to worry about, boys; gypsum is wonderful stuff." The last laugh is on Jaunty, though, for not till the final fade-out does he discover that gypsum is fireproof.

California Perlite Industry Follows Western Boom Trend

Expanded perlite is apparently finding its place commercially as a plaster aggregate. After years of experiments in a score of pilot plants in the West, the product is now being accepted widely by the plastering trade, and its use in that field soared during 1948.

In southern California the following operators are "popping" perlite: The Kopenite Co., Los Angeles, whose product is known as "Kopenite"; the Redco Co., North Hollywood, marketing under the trade name of "Ex-O-Lite"; the Great Lakes Carbon Corp., Los Angeles, output from whose Torrance plant is called "Permalite"; and the Volcolite Co., Basett, producer of "Volcolite".



According to data collected by the National Lime Association, 44 companies in October, 1948, shipped 185,526 tons of lime (113,605 quicklime; 71,921 hydrate). Reporting companies represent 51.8 percent of the association members' total capacity of record. Based on Pit and Quarry's estimate for the remainder of the industry, the total shipments for the month by all plants were approximately 394,000 tons. Shipments by uses and grades for October, 1948, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	1,433	7,776
Building	15,018	40,697
Chemical	97,154	23,448
Totals	113,605	71,921

New Methods of Producing Light Concrete Aggregate Published by Mines Bureau

Development of new and efficient methods for the production of lightweight concrete aggregate from clays, shales, slates, coal-mine wastes, and other mineral materials was announced today by James Boyd, director of the Bureau of Mines, in releasing a publication describing the results of an intensive Bureau study.

Use of lightweight aggregates in constructing large concrete and steel buildings means a saving of steel at times when steel is hard to obtain. The lighter weight of the concrete makes possible the use of less steel. Considered better suited to withstand the shock of earthquakes than standard concrete, lightweight concrete also can be used to build extra stories on buildings, which could not otherwise support the additional weight of standard concrete and essential reinforcing steel.

At Tuscaloosa, Ala., the Bureau investigated clays; at Norris, Tenn.—shales; and at College Park, Md.—slates and other potential raw materials. Materials were classified as to their bloating or expanding characteristics—necessary to the production of aggregates. Not only were natural bloating clays and shales studied, but means were developed to cause most non-bloating materials to bloat controllably. Studies were made of the causes of bloating, and definite bloating agents were added in various ways. The best products resembled a foam and not a sponge, and the strongest-foamed products were those with the smallest sealed-in bubbles of gas.

Conducted by the Metallurgical Division of the Bureau, tests were made in small, electrical and gas-fired furnaces and in gas and oil-fired rotary kilns. Aggregate samples also were tested by the Bureau of Standards for strength and other qualities.

Lightweight aggregate products consist of low-cost, low-strength aggregate suitable for use in building blocks such as cinder blocks, and high-quality, high-strength aggregates used in structural concretes and capable of withstanding heavy loads.

A copy of Report of Investigations 4401, *Production of Lightweight Concrete Aggregates from Clays, Shales, Slates, and Other Materials,* may be obtained free from the Bureau of Mines, Publications Distribution Section, 4800 Forbes Street, Pittsburgh 13, Pa.

Andreas Acquires Control of North American Cement Corp.

Controlling interest in the North American Cement Corporation, New York, N. Y., was recently acquired by Albert M. Andreas of Minneapolis, Minn., who has been elected executive committee chairman and a director.

North American has four plants, located at the following points: Catskill and Howes Cave, N. Y., Hagerstown, Md., and Berkeley, W. Va. Mr. Andreas stated that no changes are contemplated in the firm's personnel.

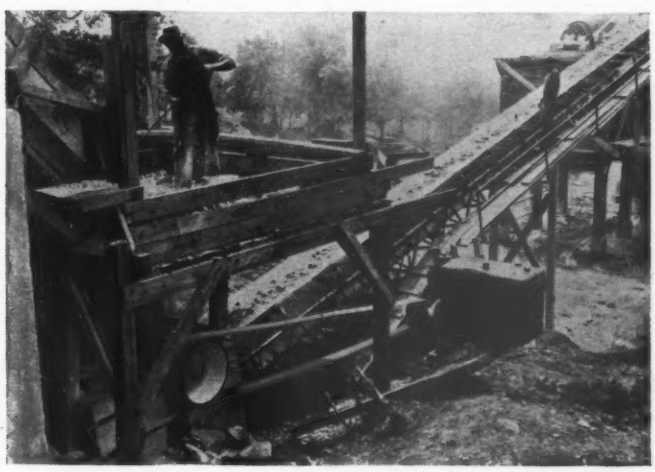
1,400,000-Bbl. Per Year West Penn Cement Output Added to Penn-Dixie's

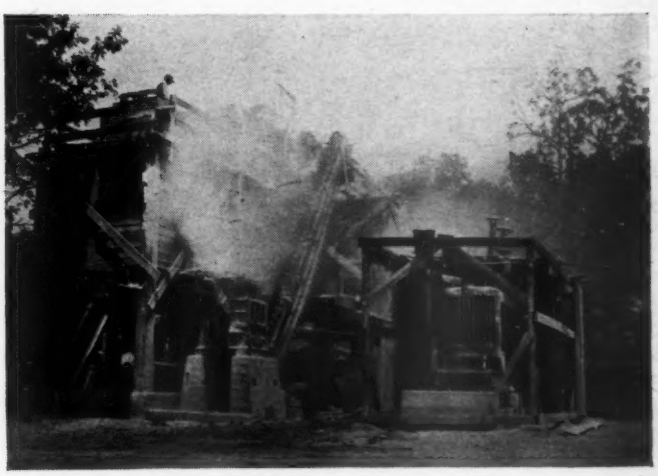
Pennsylvania-Dixie Cement Corporation has announced the purchase of all the assets and properties of the West Penn Cement Company, located at West Winfield, Butler County, Pa., about 40 miles northeast of Pittsburgh.

The acquisition of this plant, with its annual capacity of about 1,400,000 barrels, will enable Penn-Dixie to cover the western Pennsylvania, eastern Ohio, northern West Virginia, and western New York marketing area, which could not be reached advantageously from its other mills. A sales office will be continued at West Penn's old address, 233 South Main Street, Butler, Pa.

Plans for a cement plant in the Eregli coal fields area on Turkey's Black Sea coastline are now complete. ERP approval has been sought for this new plant, which will produce 200,000 tons of cement per year.

• An action shot at the Blue Diamond Corporation's underground quarrying operation near Blue Diamond, Nev., shows an unusual application of mining equipment. Here an Ingersoll-Rand loader of a type usually employed inside the mine is conveying material from the interior of the mine slope and loading it into a 27FD rear-dump Euclid truck.





• At the McClellan Stone Company's newest and most modern plant at Horse Cave, Ky., diesel engines supply power for all key operations. Compressed air for drilling blast holes at the quarry is supplied by an Ingersoll-Rand No. 315 compressor, powered by an International UD-18 diesel engine (upper left).

After a 100-yd. haul from the quarry by truck, International KB-7 with Hercules 3-cu. yd. dump body (upper right), the rock is dumped into the hopper of the primary crushing plant, a Telesmith Size 10, driven by an International UD-9 (lower left). Still under diesel power, the material is carried to the top of the plant by a 100-ft. conveyor, to be thrown onto a Telesmith vibrator screen. Smaller particles are routed into the hopper of a Gruendler hammermill, powered by a 180-hp. International UD-24 (lower right), then pulverized into agricultural limestone. The remainder of the rock goes to the hopper of a road rock breaker, also diesel-powered, and is reduced to road stone size.

Dodge Corp. Forecasts Of Construction Picture For 1949 Announced

Building and engineering volume estimates for 1949 released by F. W. Dodge Corporation to the construction industry indicate that moderate declines in physical volume of private residential and nonresidential building and moderate increases in public building and engineering projects are likely next year.

On the basis of present information available to the Dodge corporation, it appears that the number of dwelling units to be built next year will be 7 percent less than in 1948, bringing the total for the 48 states to approximately 884,000, as compared with 950,000 units estimated for this year.

Other classifications of building for which declines are anticipated are: commercial buildings, 9 percent; manufacturing buildings, 15 percent; churches and other structures used for religious purposes, 19 percent; social and recreational buildings, 14 percent.

It is expected, however, that there will be increases in educational and science buildings by 10 percent and in hospitals and institutional buildings by 11 percent.

In an analysis supporting these estimates, Thomas S. Holden, president of the Dodge corporation points out:

"According to our analysis, election day found the American economy at or near the peak of a postwar boom. While such inflationary aspects as vastly increased money income, shortages of many categories of goods and services, and rising prices, wages and cost of production and construction have been conspicuously present, the boom has been unique in a very important respect. It has not been accompanied by a boom psychology. There have been no significant speculative excesses in security prices, real estate or commodity inventories. This postwar boom has, therefore, not generated the forces that usually cause severe reversals. The sanity and cautious optimism of the vast majority of people have held inflationary forces in check while enormous production on farms and in factories has moved rapidly in the direction of balancing the supply of many goods and services with the enormous demand.

"On the basis of our appraisal of the climate in which the construction industry will function next year, our 1949 estimates indicate an anticipated decline in those nonresidential building classifications which are predominantly private: commercial, manufacturing, religious, and social and recreational buildings. Bases of these anticipated reductions are the following facts: buying resistance is being felt in some of these lines already, equity financing has become increasingly difficult, mortgage credit has tightened, confidence of many potential private investors has probably been shaken in some degree by the results of the national election.

"The same factors are likely to affect the volume of private residential building. The home builders responsible for record housing production in 1948 now rather generally realize the necessity of producing and offering for sale houses with lower price tags than those attached to a large proportion of the 1948 output. This will be particularly difficult of attainment if renewed inflationary forces should tend to further rises in material prices and building wage scales. A moderate slowing down of activity during part of the year would facilitate market adjustment.

"Needs for rental housing continue very great. Recent legislation may stimulate this type of activity. Even if the Congress should authorize a government housing program involving subsidies, it may not be large enough or effective soon enough to offset probable decline in private building of single-family houses. We have estimated a moderate decline in single-family houses and apartment building equal to the 1948 rate, with the net effect of a moderate decline in total new dwelling units. Housing production, even at the reduced rate we anticipate, would go far toward ending the acute phase of the housing shortage.

"Educational buildings, hospitals and institutions, and public works and utilities projects all seem likely to increase, in view of the status of authorized programs and appropriation commitments. Maintenance and repair work and farm building, which are not included in the estimates, are more likely to decline somewhat than to increase, we believe."

• We give our unqualified support to the American Red Cross 1949 Fund Campaign, currently being carried on throughout the United States. This non-profit organization has many ramifications — all contributing to the welfare, health and safety of Americans. Among them are the following: polio nursing, disaster aid, safety efforts, aid to veterans, blood program, Red Cross radio network, Junior Red Cross exports and gift boxes, and many other services worthy of your support.

• Officials of the Thew Shovel Company, Lorain, O., recently posed beside the 4000th Lorain "Moto-Crane" built in the last nine years when the 20-ton crane was turned over to M. B. Garber, sales manager, by President C. B. Smythe. In the photograph are, left to right: Mr. Garber; Mr. Smythe; E. W. Johnston, general works manager; and R. H. Zeilman, chief engineer. Destination of the Moto-Crane was the Bethlehem Steel Corporation.

B. S. Magee, H. A. Eckmann Appointed to Traylor Staff

Bayard S. Magee and Henry A. Eckmann recently became affiliated with the sales staff of the Traylor Engineering & Manufacturing Company, Allentown, Pa.

Mr. Magee has been associated with the lime industry for the last 22 years, and was recently manager of the National Gypsum Company's new lime plant at Kimballton, Va. Previously he had been plant manager for National at Bellefonte, Pa. He is widely known as an expert on the rotary calcination of lime.

Mr. Eckmann has been employed by several mining companies, among them La Luz Mines, Nicaragua, Getchell Mines, Nevada, and the Anglo-American Mining Corp., Bodie, Calif.

Agricultural Limestone Institute Division of N. C. S. A.

Convention Program

Edgewater Beach Hotel, Chicago, Feb. 21, 22

SUNDAY, FEBRUARY 20

2:30—Meeting of board of directors.

MONDAY, FEBRUARY 21

9:00—Registration

MORNING SESSION

East Lounge

H. C. Krause, president, Agricultural Limestone nstitute, St. Louis, Mo., presiding

9:30—Highway U. S. A. — a three-dimensional color picture shown by courtesy of Barber-Greene Co., Aurora, Ill.

10:00—Call to order and greetings from the president, H. C. Krause.

10:15—Report of managing director, Henry A. Huschke.

10:45—Report of secretary-treasurer—J. R. Boyd.

10:55—Announcement of convention committees: nominating, resolutions, auditing.

11:00—Federal Legislation Affecting the Limestone Business—Charles A. Horsky, Washington, D. C.

12:00—Adjournment.

GENERAL LUNCHEON

South Room—12:30

S. P. Moore, Cedar Rapids, Ia., presiding

The Long-Range Needs of the Agricultural Conservation Program—Albert J. Loveland, Under Secretary of Agriculture, United States Department of Agriculture, Washington, D. C.

AFTERNOON SESSION

East Lounge

Problems in the Production of Agricultural Limestone—E. V. Scott, Dallas, Tex., presiding

2:30—(a) Blasting

Discussion leader—Jules E. Jenkins, Vibration Measurement Engineers, Chicago, Ill.

(b) Crushing and grinding

Discussion leader—E. Lee Heidenreich Jr., consulting engineer, Newburgh, N. Y.

(c) Screening

1. Moist materials

Discussion leader—C. E. Hogeboom, engineer, Consumers Co., Chicago, Ill.

2. Dry materials

Discussion leader—Joe C. Lawrence, general manager, Liberty Limestone Corp., Buchanan, Va.

4:45—Adjournment.

5:00—Meetings of convention committees.

6:30-9:30—Cocktail party and buffet supper —Michigan Room

TUESDAY, FEBRUARY 22

MORNING SESSION

East Lounge

N. F. Schwarz, Decatur, Ill., presiding

9:30—Power Behind the Nation—Motion picture shown by courtesy of the U. S. Treasury Department.

10:00—How We Increased the Use of Agricultural Limestone in Our County—J. B. Turner, Fayette County Farm Adviser, Vandalia, Ill.

10:45—The New Concept of Elastic Soil Fertility As It Affects Limestone Use—Dr. R. H. Bray, professor of soil fertility, University of Illinois, Urbana, Ill.

ANNUAL BUSINESS MEETING

East Lounge

H. C. Krause, president, A.L.I., presiding

11:30—Report of auditing committee.

11:35—Report of resolutions committee.

11:45—Report of nominating committee and election of officers and members of the board of directors.

12:00—Greeting of president-elect.

GENERAL LUNCHEON

South Room—12:30

John H. Riddle, Marion, Kan., presiding

Preview of Progress—L. F. Livingston, manager, Extension Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

AFTERNOON SESSION

East Lounge

W. E. Stone, Piqua, O., presiding

2:00—Our Experience in Promoting Agricultural Limestone—W. F. Sharpe, Dillon, Sharpe & Co., Columbus Junction, Ia.

2:45—The Other Side of the Fence—A 16-mm. motion picture in sound and color produced by Phillips Petroleum Co.

3:10—Increasing the Value of the Agricultural Limestone Institute to Its Members —All members are invited to express themselves freely and frankly on this subject, so that the board of directors and the staff may have the benefit of members' suggestions in planning future activities.

3:30—Adjournment.

3:45—Meeting of newly elected board of directors.

New Mining Publication Makes Bow as A.I.M.E. Organ

Mining Engineering, a new magazine for operating mining engineers, made its debut in January 1949. It replaces *Mining Technology, Coal Technology* and *Mining and Metallurgy,* which has been the official publication of the American Institute of Mining and Metallurgical Engineers for 29 years.

This new magazine is being published for Mining Branch members of the A.I.M.E. who are interested in ore finding, mining, and concentrating methods and equipment relating to metallic and nonmetallic ores and coal. Utilization and economics will also be covered.

Pit and Quarry Goes South To a Young Lady of Caracas

Proof that PIT AND QUARRY follows its interested readers to far away places is seen in a bit of information of a "personal" nature. Linus R. Gilbert, president of the Kingston Trap Rock Company, Kingston, N. J., writes that his daughter, Norma, now Mrs. Asa H. Farr, will receive regularly her copy of PIT AND QUARRY in her new home in Caracas, Venezuela.

Mrs. Farr, who was formerly associated with her father in his crushed stone business, apparently takes such an active interest in matters germane to that industry that her father considered PIT AND QUARRY a must on her periodical list.

• Shown above is the Marion Type 5561 shovel's new 45-cu. yd. dipper, said to be the largest of its kind in the world. Two years ago the Marion Power Shovel Co. turned out its 40-cu. yd. dipper; now space for 5 more cu. yds. of material has been added. This dipper, delivered last October, has been in use since December 1 at the Hanna Coal Company's mine in southeastern Ohio. Standing beside and inside the "45" are the following Marion officials: A. F. Busick Jr., chief engineer; D. E. Rizor, assistant to the vice-president in charge of sales and service; Charles Gerber, manufacturing manager; John M. Demarest, vice-president and works manager; J. P. Courtright, vice-president in charge of sales and service; and Robert Pennisten, dipper design engineer.

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE contents of the February, 1919, issue of PIT AND QUARRY were devoted largely to the conventions and other activities of the numerous industry associations which existed then. The most important of the conventions was that of the National Assn. of Sand and Gravel Producers held in Chicago, January 28 and 29. The theme of this meeting was railroad freight rates, and a resolution was passed putting the association on record as unalterably opposed to any further advance in rates, and to government operation of the railroads. President A. J. Blair of the National Crushed Stone Assn., was an honored guest and the speaker at this meeting. All officers were re-elected, as follows: Harry Donnelly, president; Walter F. Jahncke, vice-president; E. Guy Sutton, secretary-treasurer.

The Illinois Assn. of Sand and Gravel Producers held its meeting at the same time as the national group. Officers elected were: M. D. Schaff, president; J. D. Pearson, vice-president; J. C. Brandt, secretary-treasurer.

The American Sand Assn. held its annual meeting on January 8 at the Hollenden Hotel, Cleveland, O. These producers of silica and molding sand elected as their officers the following: M. M. Everhard, president; Harry Boughton, first vice-president; E. M. Ayers, second vice-president; Hubert B. Fuller, secretary-treasurer.

The directors of the National Slag Assn. met on January 10 at the association's Cleveland office primarily to elect new officers and directors. The officers elected were: F. A. Sarstedt, president; C. E. Ireland, vice-president; H. J. Love, secretary-treasurer.

Freight rates were the chief topic at the annual meeting of the Ohio Sand & Gravel Producers' Assn. on January 16 at the Deshler Hotel in Columbus, O. Officers were re-elected as follows: F. D. Coppock, president; R. E. DoVille, vice-president; E. S. Warner, secretary-treasurer.

Freight rates and testing shared the limelight at the annual meeting of the Indiana Sand & Gravel Producers Assn. held January 21 and 22 in Indianapolis. The officers elected were: H. C. Huffstetter, president; M. A. Neville, vice-president; W. P. Carmichael, secretary-treasurer.

The newly-formed Michigan Sand & Gravel Producers' Assn. held its first annual meeting and made plans for future activities. The officers were: C. N. Ray, president; W. O. Smith, vice-president; John S. Porter, secretary-treasurer.

The executive committee of the Lime Association met in Washington and decided to postpone the annual convention scheduled for February 12 and 13 to some time in June. The main reason given was that this 7-month-old group had not had time to make the necessary preparations due to priorities and other pressing problems which had taken up most of the time of the officers and staff.

The program announced for the annual meeting of the National Crushed Stone Assn., Feb. 11 and 12, indicated that freight rates would be one of the top subjects of discussion.

The Nebraska Aggregates Assn. was formed at a meeting held on January 7 in Omaha. R. C. Yant was elected chairman and J. H. Allen, vice-chairman. This and similar organizations in Arkansas and Missouri were formed largely through the efforts of John Prince of Kansas City, Mo., who was chairman of the War Service Committee on Mineral Aggregates of his district.

Announcement was also made of the organization of the Georgia Sand & Gravel Producers Assn., with A. P. Burke as president, T. M. Smiley as vice-president, and R. A. Boston as secretary-treasurer.

The Silica Sand Assn. of Illinois was formed, with Paul L. Vittur as secretary. Officers were: J. F. Blakeslee, president; Charles Neison, treasurer.

Steps were taken at a meeting at Columbus, O., on January 7 to reorganize the National Agricultural Limestone Assn. A. P. Sandles was elected secretary to promote the use of agstone and a national field lecturer was hired to help him. The officers elected were: J. C. King, president; F. W. Kanengeiser, vice-president.

Several important plants were also described in the February, 1919, issue. There was a progress report of the construction of the largest rotary kiln lime plant in the United States, which was to be a part of the government nitrate plant at Muscle Shoals, Ala. Illustrations showed that progress was well along with three of the seven 8- by 125-ft. kilns in place. Each kiln was rated at 100 tons of lime daily. This plant was designed and built by the Fuller Engineering Co.; Allis-Chalmers and Reeves Bros. supplied the kilns.

The new plant of the Flint Crushed Gravel Co., Des Moines, Ia., said to be the largest in the state, was also featured. Stripping and loading was done by a 2½-cu. yd. Monighan dragline excavator. This plant was one of the first to use shaker screens, made by the Good Roads Machinery Co., then of Fort Wayne, Ind.

Also described was the new 500-ton-per-day plant of the Eau Claire Sand & Gravel Co., Eau Claire, Wis., still a leading producer. In addition to concrete gravel and sand this plant made sand blast sand and roofing gravel. A feature was the use of four reinforced concrete silos, each 16 ft. in interior diameter and 32 to 36 ft. high.

Another quarrying article by Oliver Bowles told how to lay out tracks in a quarry. The systems described ranged from the simplest to those of the most complex type, with 20 or more loading spurs.

The sixth and last of a series of staff-written cost articles was featured. It was said to be the first article ever to appear in print which gave the true basis of keeping field costs that are real and not averages.

There was also the usual variety of news and other information. Of interest to many was the announcement that Raymond W. Dull, outstanding inventor, and designer and builder of sand and gravel plants, had joined forces with the Link-Belt Co.

• Stripping clay and iron ore, then digging sand and gravel to feed a washing plant, is the operation carried on by the Diamond Grit Co., Baltimore, Md., with their new mobile Lorain TL-20 self-propelled crane. There are 600,000 cu. yds. of sand and gravel (weighing 100 lbs. per cu. ft.) in this large pit. This crane is used in Diamond's numerous scattered pits.

WASHINGTON NEWS LETTER

THE President's messages to Congress — the State of the Union message, the Economic Report, and the budget message — started the ball rolling for the 81st Congress. Perhaps a more accurate analogy would be that he hit the ball deep into "left" field — and the word "left" is used advisedly.

There was nothing very new or surprising in the President's long list of requested measures. For the most part, they were the same things he called for in earlier messages and in his numberless campaign speeches. Cynical Washington found only one thing to get excited about—that, contrary to well established precedent, the President apparently means to see that his campaign promises are enacted into law.

Nevertheless, it is believed here that the impact of the messages will be felt for a long time, that they mark a new relationship between government and business. Some of Washington's keenest observers point out that this is the first instance in peacetime in which the government has asserted that its judgment as to what the output of a particular business should be is superior to that of the owners. As evidence they point to the President's request for legislation "to authorize an immediate study of the adequacy of production facilities for materials in critically short supply, such as steel; and, if found necessary, to authorize government loans for the expansion of production facilities to relieve such shortages, and furthermore *to authorize the construction of such facilities directly if action by private industry fails to meet our needs.*"

If authorized by legislation, this would be a long step in the direction of economic planning. The procedure would seem to be as follows: The government would first make a determination that a particular material is in critically short supply. (The present request is aimed at the steel industry, but it might include other metals as well, and under other circumstances could affect many additional products.) It would then study the adequacy of the facilities for producing the material. If they are found to be inadequate to relieve the critical shortage, the government could encourage their expansion by making loans available. Senators Sparkman and Murray and

By S. HERBERT UNTERBERGER

Representative Patman have already introduced a bill to authorize the Reconstruction Finance Corporation to make $15,000,000,000 available for such loans. If even with this encouragement, the necessary productive facilities are not forthcoming, the government itself would construct them and, presumably, arrange for their operation. Put this way, the proposal sounds almost radical. The *government,* rather than the men who own and operate a business, would decide how much should be produced. But many a businessman who finds his business withering because he cannot get steel for use as a raw material, or steel products which he needs desperately, will find much to recommend it.

Actually, this is only a further logical step in a development which began some time ago. In this connection, it is well to remember that the 79th Congress passed the Employment Act of 1946. At that time, the proponents of a law that would require the government to guarantee full employment believed that they suffered a defeat when, after extended wrangling, the Congress passed a law which included in its statement of policy the following jumble of words: "The Congress hereby declares that it is the continuing policy and responsibility of the Federal Government to use all practicable means consistent with its needs and obligations and other essential considerations of national policy, with the assistance and cooperation of industry, agriculture, labor, and state and local governments, to coordinate and utilize all its plans, functions and resources for the purpose of creating and maintaining, in a manner calculated to foster and promote free competitive enterprise and the general welfare, conditions under which there will be afforded useful employment opportunities, including self-employment, for those able, willing, and seeking to work, and to promote maximum employment, production and purchasing power." While this was certainly no guarantee that everyone able and willing to work would have a job, exactly what it did mean nobody really knew. Consequently the passage became subject to many interpretations.

The President can hardly be accused of taking unwarranted license with these very ambiguous words when he chose, in his State of the Union message, to interpret them as follows: "The American people have decided that poverty is just as wasteful and just as unnecessary as preventable disease. We have pledged our common resources to help one another in the hazards and struggles of individual life. We believe that no unfair prejudice or artificial distinction should bar any citizen of the United States from an education, or from good health, or from a job that he is capable of performing.

"The attainment of this kind of society demands the best efforts of every citizen in every walk of life, and it imposes increasing responsibilities on the government.

"The government must work with industry, labor and the farmers in keeping our economy running at full speed. The government must see that every American has a chance to obtain his fair share of our increasing abundance. These responsibilities go hand in hand.

"We cannot maintain prosperity unless we have a fair distribution of opportunity and a widespread consumption of the products of our factories and farms.

"Our government has undertaken to meet these responsibilities."

If the government is required to do all these things and, thereby, is "firmly committed to protect business and the people against the dangers of recession and against the evils of inflation," it is almost inescapable that the **government** should require more power—the power to control credit, regulate commodity speculation, control exports, authorize priorities and allocations, control prices, rents, and wages, and finally determine the output of industry by making certain that there are adequate facilities to produce the quantity of various materials which it deems desirable.

Thus the Truman **messages** merely advance a well established trend one step forward, but it seems to be a long step. What is surprising is the equanimity with which all this was received. The President's messages were met with applause, varying from polite to enthusiastic. The legislative machinery is grinding along. The only real excitement

(*Continued on page* 67)

Meet the AIRSLIDE

another ON THE SPOT report

New development by Huron Portland seen as major contribution to materials handling art

ONE of the most provocative developments to come out of the cement industry in many a moon is the "Airslide," a truly revolutionary type of conveyor which can move huge quantities of fine, dry materials without recourse to moving parts. We first saw the device in operation well over a year ago at the Alpena, Michigan, mill of the Huron Portland Cement Co., where all the development work has been carried out. At that time the method was still largely experimental, and the unit hadn't even been given an official name.

More recently, upon learning that Airslides are being manufactured by the Fuller Company under exclusive license (except for motor vehicles) from Huron, we made a special trip to Alpena in order to report at first hand on this major contribution to the technique of handling materials. On both visits our reaction to the Airslide is best indicated by the comment which some nameless individual is supposed to have made upon seeing an elephant for the first time: "It ain't so!"

Among the many intriguing features of the Fuller-Huron Airslide, to give the unit its full name, is its apparent simplicity. It is actually a gravity conveyor which fluidizes the material to be moved by passing low-pressure air through the slightly inclined, porous medium which supports the stream of material. The "porous medium" used is a

• Extreme left: This photo, taken at Huron's Riopelle Street distributing plant in Detroit, shows two applications of the new type conveyor. Cement discharged from a weigh hopper inside the building travels down Airslides projecting from the window and drops by gravity into a trailer truck equipped with cartridge Airslides for self discharge.

• Left: A general view of the Alpena, Mich., mill of Huron Portland Cement Co., where most of the development work on the Airslide has been centered. Airslides now in operation throughout this plant are conveying 40,000 tons of material daily.

• Below: A view of the S.S. "Samuel Mitchell", which was recently converted to permit extensive use of Airslides for self discharge.

Photo by Claude Lockwood

By William M. Avery

woven canvas fabric of high resistance to air flow. The low air permeability of the fabric is the determining factor; and it is this feature which distinguishes this successful method over the early uses of the high permeability porous block conveyors developed by G. Polysius.

The air chamber, or lower half of the conveyor, is essentially a sheet-metal duct to which the belting is cemented with a plastic compound, and clamped; air is admitted to the chamber at any point in its length through conventional duct work connected to the discharge of a small blower, which may serve just one conveyor or a battery. When used for conveying out of bins, hoppers or other storage vessels, the upper portion of the Airslide is simply an open trough; in all other applications the unit is covered with sheet metal in order to prevent the escape of the finely pulverized materials which it normally conveys.

At Huron's Alpena mill Airslides are being used extensively and with outstanding success for handling raw materials (including mill stream, air-seperator tailings, and kiln feed), and for the handling of cement (including preliminary feed, air-separator tailings, and finished cement). Important applications of the Airslide have also been worked out at Huron's ten distributing plants located at ports throughout the Great Lakes, as well as for a unique unloading system recently installed in the Huron Transportation Company's bulk cement carrier S. S. *Samuel Mitchell.*

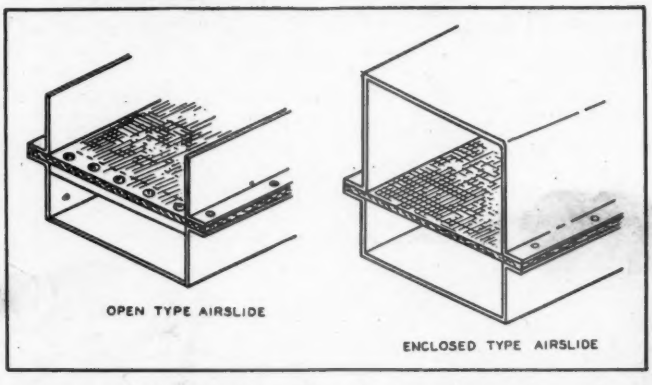
The development of the Airslide is a story in itself. Some years ago Huron's engineers began experimenting with an air feeder for controlled feeding of pulverized materials from bins and hoppers. It was found that when dry and sufficiently fine materials were properly aerated they would

flow readily through a baffle-and-weir arrangement which acted as a positive cut-off the moment the flow of air was interrupted.

The Huron Airfeeder (now called "F-H Airfeeder"), patented in 1944, worked so successfully that those who participated in its development began wondering if an elongated version of the device might serve as an efficient conveyor. Since the movement of fluidized material in the feeder was actually horizontal, it seemed logical that the same material, properly aerated in a long trough, would flow readily even on relatively flat slopes. The first slide actually built and tested was a long, square box with a series of aerating pads located at fixed intervals along the bottom. Although this arrangement worked after a fashion, it was not very effective on slopes much under 19 degrees. Since for runs of any length this would have required more head room than would ordinarily be available, it was rejected as impractical, and the search went on for some better method of aerating the material so that it would flow with less head.

The solution proved to be the use of a continuous membrane running the full length of the conveyor. In the first efforts along this line 12-ounce canvas duck was used as a porous medium. It was quickly found that one of the very critical factors was the resistance which the membrane, or porous medium, offered to the passage of air. Multiple layers of lightweight canvas were found to give more uniform distribution of the low-pressure air than just one layer. From this discovery the use of low-permeability woven fabric evolved, and the Airslide became a practical reality.

For the past few years Airslides have been in full-scale everyday use in the mill at Alpena. Some of the early models have been replaced to keep pace with the steady progress in design, but the significant fact is that almost all of the development work has been carried out under actual operating conditions in one of the world's largest cement mills. Less than a year ago a full size experimental unit was installed in one of the mill buildings in anticipation of encountering new problems as a result of wide commercial application.



• Sketches above show the two most commonly used types of Airslide. The enclosed type is used for general conveying; the open for feeding out of bins, hoppers, trucks and ships' holds.

At present, Airslides in service at Huron's mill and plants total close to 3,000 ft. in length and additions are being made constantly. These units are conveying over 40,000 tons of material per day. Conveyors of other types totaling more than 2,100 ft. in length have been removed from various departments in the mill and replaced by the new conveying units. Just in connection with a major expansion program completed late in 1948, some 500 ft. of Airslides were installed in circuits that would formerly have required screw conveyors. Since Airslides require only about 10 percent of the horsepower required by screw conveyors of comparable capacity, the footage installed at the Alpena mill represents a saving of close to 800 hp.—a considerable economy even in a very large mill.

The power economy of the Airslides can best be appreciated by comparing its requirements with those of conventional conveyors in a specific application. In the raw grind section of Huron's mill two 16-in. diameter screw conveyors were used in circuit with each of 8 mills. Thus 16 motors and 16 speed reducers, representing 200 connected horsepower, were used to drive approximately 800 ft. of screw conveyor. The same footage of F-H Airslides is now being operated with eight 2-hp. fans to do exactly the same work.

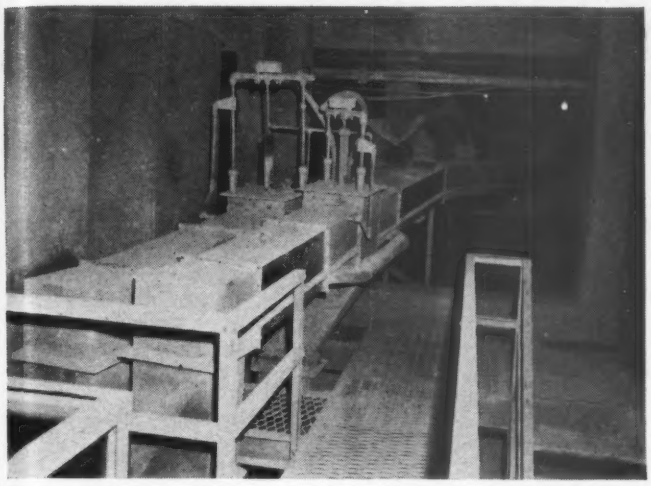
Although Airslides can be operated with compressed air, economy and other considerations favor the use of relatively small, low-pressure fans. For very long runs, a small individual fan for each conveyor has been found to yield the best results. Where there are a number of relatively short Airslides in one section of a plant, it is wholly practical to use one large fan to supply a header from which individual ducts are run to the various units. Huron has followed this practice extensively in its mill installations. In the S.S. Samuel Mitchell, short Airslides which feed cement from each side of the hold to screw conveyors located amidship receive air from long headers running the length of the ship. This air is supplied by a Roots-Connersville positive pressure blower, operating at about one to two pounds pressure, because of the head of cement in the ship's hold.

On standard portland cement it has been found that the minimum incline required for bare movement of material is around 2½ degrees. The largest Airslides in Huron's mill are two 14-in. wide by 180-ft. long units installed in the raw grind section. Each of these conveyors is on an incline of 4 degrees (which is about an average slope in most installations), and each moves approximately 225 tons of material per hour. Other conveyors in the same section are as long as 200 ft., but are made up of sections which vary in width from 8 in. to 14 in.; these collect the fines from eight separators, while other Airslides return the separators tailings to the raw mills. Up to the present time 225 t.p.h. represents the largest volume that has been put through a single Airslide, but there seems no reason for regarding this as the ultimate limit.

Apart from low intial cost and economy of operation, Airslides seem to offer a number of other equally impressive advantages. Use of curved sections permits running around obstacles wherever they may be encountered, an important flexibility almost impossible to obtain with straight-line conveyors. By using several lengths of relatively short standard sections for all straight runs, replacement of any section for repair purposes can be accomplished in a few minutes. Since all flange joints are tightly sealed with a special rubber cement, Airslides operate without dust. They are noiseless, require no lubrication, entail no accident hazards and are easy and inexpensive to install. Hand holes are installed at frequent intervals so that the belting may be inspected readily, although it has been found that only under the most severe conditions does the material wear appreciably. Belting can remain in service without impair-

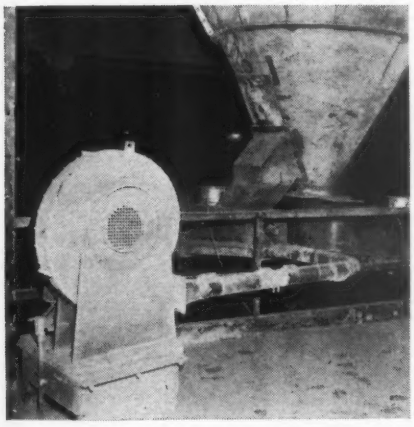
ment of performance until holes are worn clear through. Many Airslides at Alpena have been operating three years continuously without discernible wear to the woven fabric.

One of the first out-of-plant adaptation of the new type of conveyor was in connection with unloading bulk cement trailers. Thirteen trailer truck bodies were built in Huron's shop at Alpena, incorporating cartridge Airslides for unloading. This application has since been licensed to Gramm Trailer Corp., which is now producing aerated trailers in a wide range of types and capacities, including semi-trailer transport and bulk storage units and truck-mounted transport units. These aerated



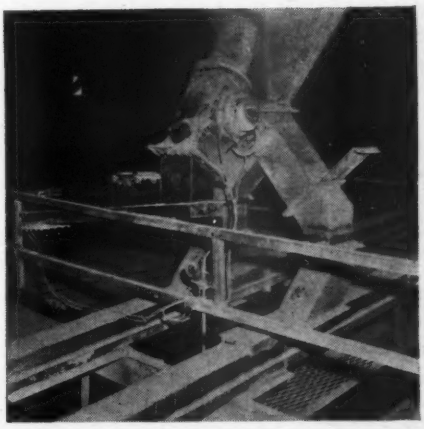
• The special valves shown here were developed to permit discharging material through the bottom of the conveyors.

• Changes in elevation are accommodated by the method shown above. Here it was necessary to step down to clear a rotary kiln.

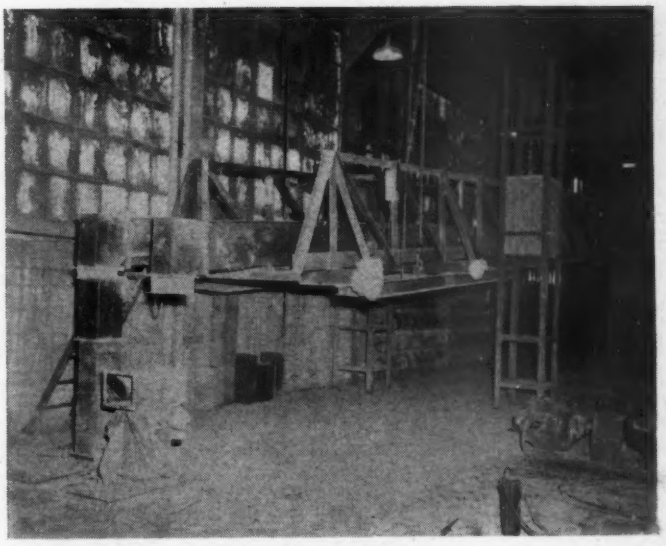


• Left: The small fan shown in this picture supplies air for the air separator tailings conveyor at the cement mill in Alpena, Mich.

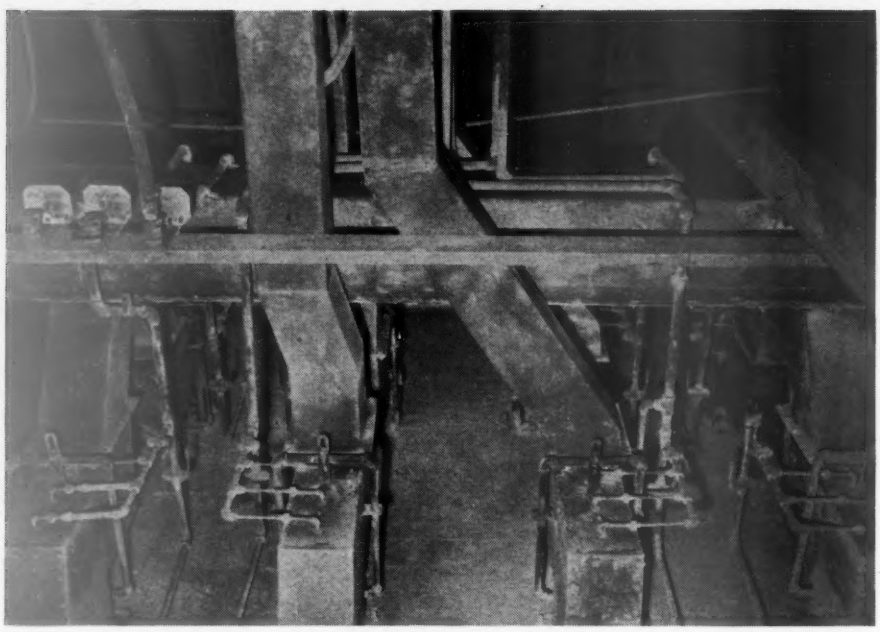
• Right: Upper Airslide in this view conveys separator tailings back to a raw mill, while two lower units each convey 50 t.p.h. of finished raw material.



• Upper Airslides in this application withdraw finished cement from overhead storage bins and deliver it to an Airslide collecting conveyor. Screw conveyor in the distance discharges into one of the lake vessels which link Huron's mill with the distributing plants.



• A view of the experimental unit installed in one of the mill buildings at Alpena. Supporting trusses are pivoted at the far end; they can be raised and lowered to vary the slope of the conveyors from zero to 8 degrees.



• The bottom of the storage bin at the Saginaw distributing plant, showing Air Feeders and Airslides used to feed packing machine hopper (through chutes) or bulk trucks.

trailer units are said to have a higher load-to-empty-weight ratio than those using screw-type unloading methods. They provide positive unloading at any desired speed up to 125 bbls. in 6 minutes.

An important new device at least indirectly related to the Airslide development is the "Bin-Flo," an aerating device manufactured by the Bin-Dicator Company. The Bin-Flo actually resulted from the search for a better method of admitting air to the Huron "Airfeeder." It is used extensively not only in Airfeeders, but at points of restricted flow in bins, hoppers and chutes to provide uniform and steady movement of material. The Bin-Flo has a special fabric diffuser through which air enters the material to be aerated, the quantity of air being automatically controlled by a fixed orifice in each unit.

Huron Airfeeders have been in service for several years in the company's various distributing plants located throughout the Great Lakes area, and a number of Airslide installations have been completed within the past year. For example, at the Riopelle Street plant in Detroit 44 Air Feeders are now in service, and between 400 and 500 feet of F-H Airslides have been installed. Two of the latter, or 16 in all, serve to move cement from each of the large silos to screw conveyors and elevators, and other units feed from supply bins at the top of the plant to a new truck-loading station. There are three No. 76 Roots-Connersville blowers in the plant to serve all these aerating units; normally only two of these are operated simultaneously. The three blowers are interlocked, and they are automatically regulated to cut off at 8 lbs. pressure and on at 5 lbs.

At a similar but smaller distribution plant in Saginaw, Mich., Huron is now installing Airfeeders in the bottoms of three silos. These feed cement from the bins into 10-in. Airslides which in turn feed a 12-in. screw conveyor running under all the silos. It is expected that plant capacity will be increased, when this conversion is completed, by 75 to 100 bbls. per hour as compared with the former arrangement, which utilized rotary feeders under the silos and short lateral screw conveyors to the main screw. "Bin-Dicators" installed in the main screw conveyor housing opposite each silo automatically cut off the air supply to the feeder and Airslide when the screw is filled to capacity, then reopen the air valves as soon as the material level drops slightly. In this way there is the maximum flow of cement through the screw conveyor at all times, with a very material gain in the speed of bulk loading.

Huron Airfeeders have recently been utilized at the Saginaw plant to gain remarkable flexibility in both loading and packing operations out of a single silo. Concrete partitions

• Left: A cargo hold partially emptied by Airslides, which discharge the cement into a screw conveyor housed in the tunnel at the right. • Below: A view in the cargo hold of the "Mitchell", showing the arrangement of Airslides used in unloading operations.

were poured in one of the three main silos to make four compartments for various types of cement. With two Airfeeders in each segment it is possible to feed either the packer or load bulk from any one of the sections, or even, if necessary, to load bulk and pack simultaneously from the same section. Storage capacity of the plant at Saginaw is about 80,000 bbls., as compared with 175,000 bbls. at the Detroit plant.

The experimental unit at Alpena will be used extensively, not only for further development work, but for application studies. It consists of two conveyors, 8 in. wide by 94 ft. long, carried on trusses which are pivoted on bearings at one end and supported by counterweights at the other. The angle of incline can be varied from zero to 8 degrees by means of chain hoists. There is a 100-bbl. supply tank above the upper end, and a 3-hopper receiving bin under the discharge end. The circuit is closed with a combination of Airslides, a screw conveyor and a bucket elevator, so that the same material can be run through under various conditions of slope, air volume, pressure and other factors.

• Airslides (center and right) feed the cement at the Saginaw plant into a collecting screw. A diaphragm control device on the left automatically stops the flow of air to the conveyor when pressure of overfeeding builds up in the screw housing and reopens the air lines when the pressure drops.

Although the principal commercial uses of the Airslide have so far been in the cement industry, it has been used successfully to convey such fine materials as gypsum, lime, fly-ash, bentonite, soda ash, barite and iron ores. It seems safe, at this point, to say that the possibilities have only been touched upon. Even within the present scope of its development, however, the Airslide is already a well established plant device, fully susceptible to engineering analysis and design.

Washington News Letter

(*From page* 61)

seems to be that generated by that super-colossal spectacle, the Inauguration.

* * *

Business men will find much interesting and important information in the Annual Review of the Council of Economic Advisors. This is a group of three distinguished economists set up by the Employment Act of 1946. In the flood of speeches and reports which descends on every new session of Congress, this document has almost been lost. In a careful and detailed statement, the Council reviews the business picture as it developed over the last year, and points out trends which are likely to develop during this year.

The members of the pit-and-quarry industries, whose products go almost entirely into construction—factories, roads, houses, railroads, etc.—will be interested in what the Council has to say about the outlook for such construction. In general, the Council expects a reduction in the volume of plant construction. The dollar volume may not fall because costs have increased, but members are quite sure that the physical volume of plant construction will drop. However, they do not expect a drop in every industry. In public utilities, for example, they expect a rate of expansion even greater than in 1948. They also conclude that increases are required in outlays for railroad roadways and structures and for highway construction if satisfactory economic progress is to be made. As for housing, the Council is concerned about the rapid decline in new housing started in the last half of 1948. On the other hand, if the President's request for a housing program to build 100,000 low-rent housing units passes, there will be much activity in this area.

$3,500,000 National Gypsum Co. Expansion Program Completed

Final inspection of its Clarence Center, N. Y., mine by officials of the National Gypsum Company recently marked the completion of the firm's $3,500,000 post-war expansion program.

According to Melvin H. Baker, president, who was one of the party, the new equipment at Clarence Center "makes the processing of gypsum from the ground to the train almost completely automatic." It was reported that the output of one day's operation at the plant provides enough products for the construction of 130 six-room houses.

Lawrence Portland Signs Dust Elimination Agreement

Lawrence Portland Cement Co. and the Borough of Northampton (Pa.) have reached an agreement regarding the elimination of an alleged cement dust nuisance which has been the subject of litigation for a long period.

Under the terms of the agreement, the company will permanently stop the operation of seven small kilns within one and one-half years from December 20, 1948. If new kilns are installed, they will be equipped with stack dust collectors of an approved type which shall be maintained in good condition and operated in a "reasonable, careful, prudent and efficient manner." If new kilns are installed up to June 20, 1951, the company shall have the right to operate its seven small kilns until the operation is satisfactory, but the time will not be extended beyond June 20, 1951.

Oak Ridge Minerals, Inc. Builds Silica Mill in Arkansas

Construction of a silica mill at Rogers, Ark., was started recently by Oak Ridge Minerals, Inc., operated by O. B. Saner of Kerrville, Tex., and H. R. McKnight of Rogers.

Expected to be ready for production on March 1, the plant is being erected on a two-acre site on the north edge of the city. The company will develop a large deposit of white amorphous silica about eight miles east of Rogers. The deposit has been determined by analysis to be one of the purest in the country, assaying more than 99 percent pure silica.

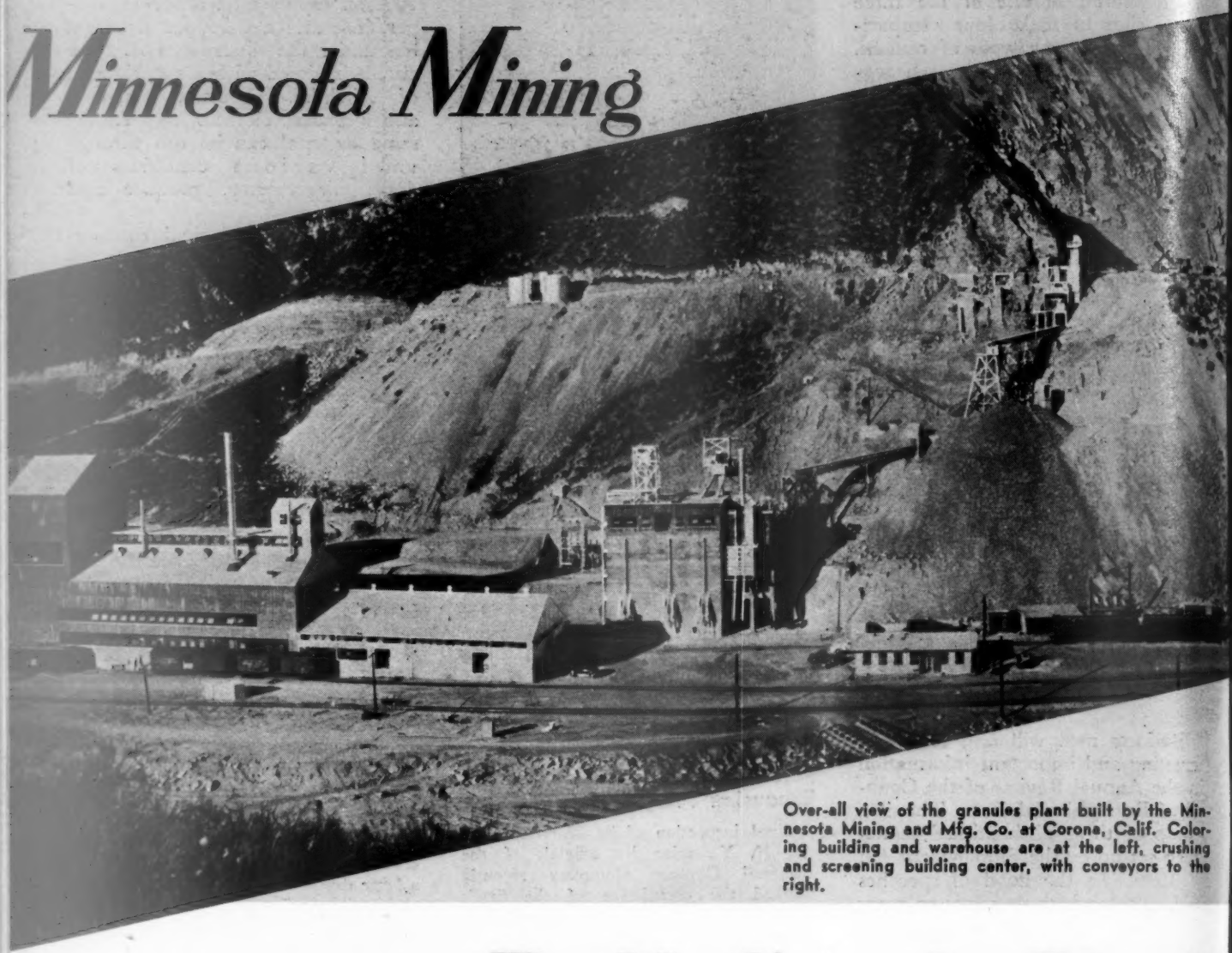
Simplot Leases Public Land For Phosphate Development

Utilization of low-grade phosphate ores to be mined from public lands for farm fertilizer is contemplated for the first time in southern Idaho under a lease arrangement with the J. R. Simplot Co. of Pocatello, according to an announcement made by H. Byron Mock, regional director, U. S. Bureau of Land Management.

The Simplot company lease provides for payment to the government of land rentals and royalties from the production of phosphates. It gives the firm the right to develop phosphate deposits on 1124 acres of public land in Caribou County, Idaho.

This lease is the first ever issued by the government in which development of lower grade ores is contemplated through stipulations for payment of royalties not only upon production from 30 percent ores but also "on any phosphate rock or lower grade which may be utilized". Simplot will be required, under terms of the lease, to invest $50 per acre, or a total of $56,000 in actual mining operations, developments or improvements, of which $18,000 shall be expended the first year.

Minnesota Mining



Over-all view of the granules plant built by the Minnesota Mining and Mfg. Co. at Corona, Calif. Coloring building and warehouse are at the left, crushing and screening building center, with conveyors to the right.

Builds Granules Plant At Site of Historic California Quarry

By HARRY F. UTLEY

another ON THE SPOT report

MANUFACTURERS of composition roofing in the Pacific Coast and intermountain regions, hard pressed to meet the postwar building demand, attained a measure of relief from high freight rates, and an assured supply of granular surfacing in 1948 when the new roofing granules plant of the Minnesota Mining & Manufacturing Co. went into production at Corona, Calif.

The plant has an initial capacity of about 100,000 tons of finished granules annually and this will be more than doubled later on when duplicate equipment is installed on foundations already provided.

This is the latest link in a chain of similar operations owned by 3M Co. Starting over 15 years ago 3M Co. discovered it had a mountain of rock acquired in the purchase of the Wausau Abrasive Co. The ingenuity of its researchers to find a volume use resulted in the erection of a granule and coloring plant at Wausau, Wis. This was followed by the purchase of a granule plant at Copley, Ohio. More recently a complete modernization has taken place at the Wausau, Wis., plant followed by the erection of the new Little Rock, Ark., plant in 1946-47. In many basic respects, the Corona plant flow-sheet coincides with those of the mid-western plants; however, with the knowledge gained over the years and as the design of each new plant benefited by the technique and operating experience of its predecessors, the Corona operation naturally reflects these developments. The plant at Corona is achieving a record high production yield with a correspondingly lower amount of fines to be handled and disposed of.

Correctly interpreting the current movement of population to the west coast, the Minnesota Mining & Manufacturing Co. had long planned a plant in California and had prospected the entire area between San Diego and Sacramento quite thoroughly, seeking an ideal stone deposit as a source of top quality raw

material for granules manufacture. It finally found what it was looking for in an 800-acre mountain of dacite porphyry along Temescal Canyon, about 7 mi. from Corona.

The stone, a hard massive trap rock is blue-black in color, flecked with white, and has the toughness and durability to withstand maximum weathering effects.

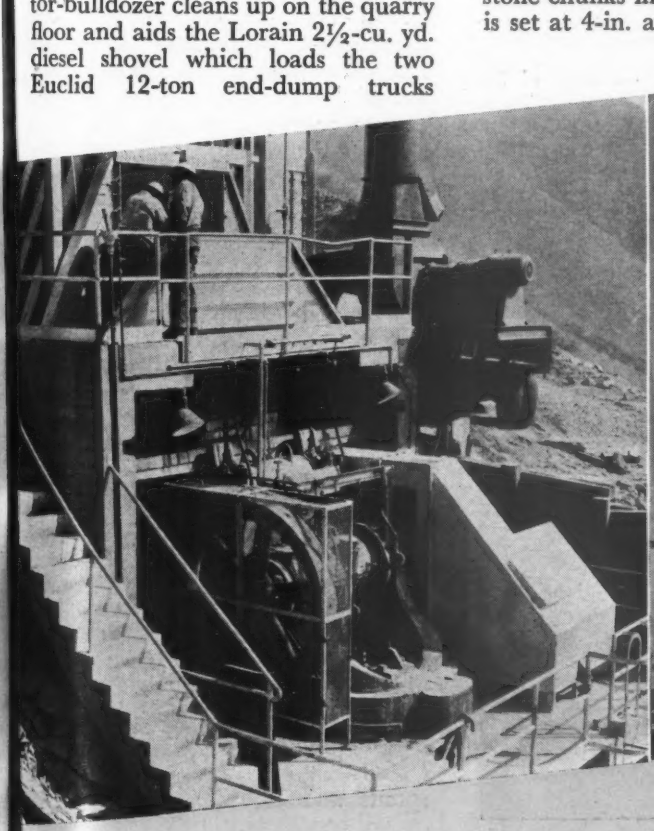
A quarry for the production of concrete aggregates had earlier been opened on the site by the Blue Diamond Corp. of Los Angeles (which took its name, incidentally, from the hard blue rock in the deposit) but was abandoned when its plant was destroyed by fire in 1928. Enough blasted-down rock — about 150,000 tons—was available on the quary floor, fortunately, to supply the new roofing granules plant for many months when production started in June 1948, and, except for some secondary shooting and skull-cracking by a Northwest crane handling a 5-ton drop ball, little drilling and blasting has so far been necessary. A few coyote tunnels have been holed into the face at floor level and some rock shot out to straighten the existing face, which is steep and nearly 400 ft. high. It will probably be benched or at least worked on two levels as quarrying progresses. Secondary drilling is done with Ingersoll-Rand J-50 jackhammers powered by a Schramm 315-c.f.m. portable compressor to reduce the large pieces to about 3 ft. maximum dimension. A Caterpillar D-8 tractor-bulldozer cleans up on the quarry floor and aids the Lorain 2½-cu. yd. diesel shovel which loads the two Euclid 12-ton end-dump trucks which carry to the primary crusher. The maximum haul is only about 600 ft. and the crusher is at quarry-floor level, about 200 ft. above the processing plant, as may be seen in one of the accompanying pictures.

The Euclids discharge into a 60-ton reinforced-concrete hopper serving the Traylor Bulldog 36- by 48-in. jaw primary crusher. This hopper is lined with T-rails to protect the concrete, and the chute end is curtained with heavy chain to retard bouncing rock. A Jeffrey 5- by 8-ft. vibrating grizzly feder takes out fines, dirt, etc., under 1 in. and puts the stone chunks into the crusher, which is set at 4-in. and produces at a top

The 2½ cu.-yd. diesel shovel loading one of the two 12-ton end-dump trucks which haul rock to the primary crusher.

Operating 8 hours a day, the primary crusher is set at 4-in. and produces at a top rate of 150 t.p.h. Fan at right exhausts dust into the atmosphere through a steel stack.

Secondary cone crusher feeds minus 1-in. stone directly to the rotary dryer in foreground. Machine shop is in background.



rate of 150 t.p.h. The crusher is driven by a 100-hp. motor mounted on a Rockwood base (this same mounting is used on all crusher drives). A Buffalo 5LL induced-draft fan is connected to a collecting hood at the crusher, and to the elevator which disposes of the minus 1-in. waste material passed by the vibrating grizzly. This fan removes the dust from the atmosphere in the immediate vicinity of the crusher, exhausting through a 30-ft. steel stack—a rather unusual procedure, yet an ingenious and effective system as it has proved.

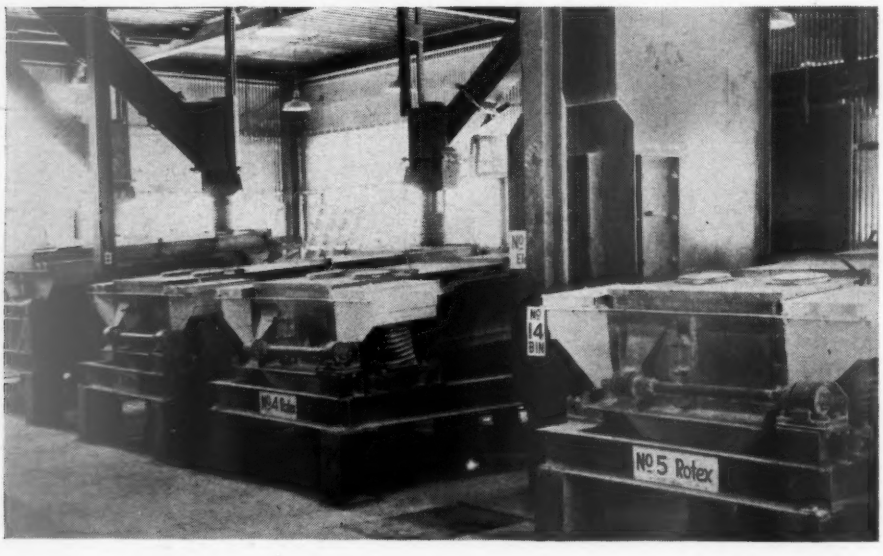
A 30-in. by 137-ft. belt conveyor carries the minus-4-in. crusher product to a surge pile with a live-storage capacity of 2,300 tons. The quarry and primary crusher operate 8 hrs. a day while the processing plant is on an around-the-clock schedule and the surge pile provides sufficient storage of rock amply to supply the plant.

Beneath the raw-rock surge pile a 24-in. by 156-ft. recovery belt operates in a concrete tunnel, feed to the belt being via two gates equipped with Jeffrey No. 5 vibrating feeders regulated to allow the belt to carry a uniform load of about 87 tons per hr. to the second-stage reduction machine, a Symons 4¼-ft. standard cone crusher set at a scant 1 in. The feed belt has a magnetic head pulley for the removal of any tramp iron.

The product of the cone is spouted directly to a 6- by 50-ft. rotary dryer. The dryer is driven by a 40-hp. motor through a Pacific Western speed reducer. A dual-purpose North American burner can use either natural gas or oil as fuel. Ordinarily, gas is used in the summer and oil in the winter in the Corona area as the demand for the former is high for heating purposes, precluding its general use by industry.

The dried rock is elevated to a 500 - ton reinforced - concrete silo which feeds, by way of a short variable-drive conveyor and elevator, the first pair of Orville Simpson "Rotex" screens on the top floor of the crushing-and-screening building. The feed is split at this point to these identical 3-deck screens which carry 3/16-in. woven wire mesh on the top decks, No. 8 mesh in the middle and No. 28 mesh on the bottom. Top-deck scalpings go to a 35-ton bin which feeds the third-stage crusher, a Symons 4-ft. shorthead cone in closed circuit; middle-deck rejects drop to a pair of 100-ton bins supplying a set of rolls, while granules retained on the lower decks go on to the sizing screens. Fines passing the 28-mesh lower deck go to two 55-ton waste bins.

Left: The roll crusher, a 3M development, breaks the granules down to their final size. It is powered by two motors.



Below: Four of the enclosed screens. Note the connections to the dust recovery ducts which form a part of the plant's well-designed dust recovery system.

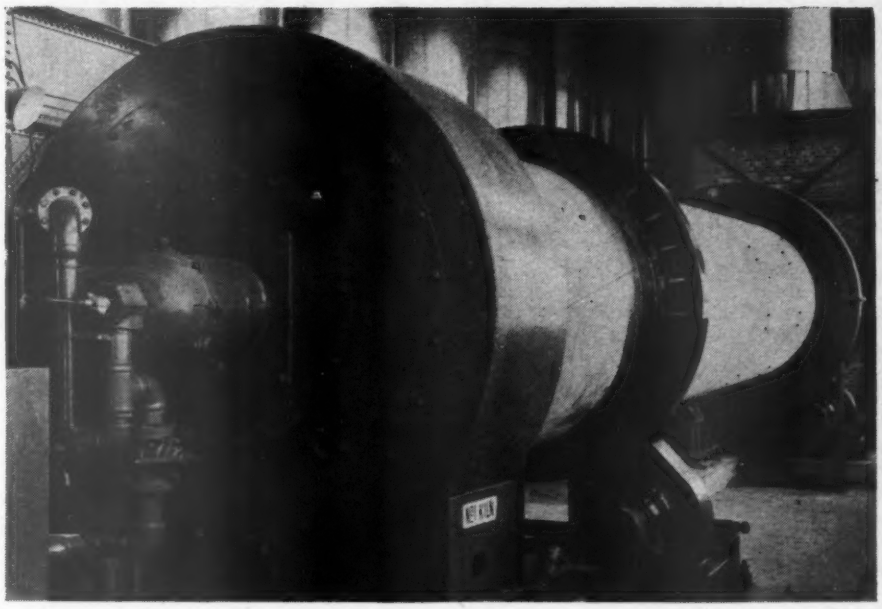
There are four triple-deck Rotex sizing screens arrange in a row along with the two preliminary screens mentioned above, the sizers receiving an even feed of No. 8-28 granules by way of an elevator and a revolving-spout distributor. Rejects from the top and middle decks pass to a surge bin, from which a Varidrive belt feeder puts the granules into the fourth and final crusher—a pair of 42 by 16-in smooth rolls. The minus No. 11 plus No. 35 granules retained on the lower decks go to the finished-material bins, through passing to waste.

The 3M Wausau roll - crusher, manufactured to 3M specifications by Traylor, employs Timken anti-friction bearings, seldom seen in this type of reduction machine, and is in closed circuit with the upper decks of the sizing screens.

Bins in the crushing-and-screening building total 14 and are of reinforced - concrete construction. Six contain the waste fines, 4 are for finished granules, 2 receive the product of the short-head cone preparatory to re-screening, and 2 serve as surge feed bins to the con and rolls. The waste bins have discharge spouts extending outside the building proper.

At this point, reference to the plant's dust-collection system is probably in order. A well-designed system is employed in all 3M plants as the processing of the dry materials generates plenty of dust. In keeping with this principle the Corona plant system was designed to keep the dust out of buildings and equipment and to provide for the discharge into the atmosphere of a minimum quantity of objectionable dust laden air. Two Multiclone collectors with Buffalo exhauster fans are employed at Corona and these are doing an excellent job. They handle a total air volume of 27,000 c.f.m., one being connected to the dryer and raw-rock silo, the other serving the enclosed screens and crushers, bins, spouts and elevators. Two 15-ton

Color is permanently bonded to the granules in this 7- by 50-ft. rotary kiln. The burner is dual-purpose; it can handle either oil or natural gas.



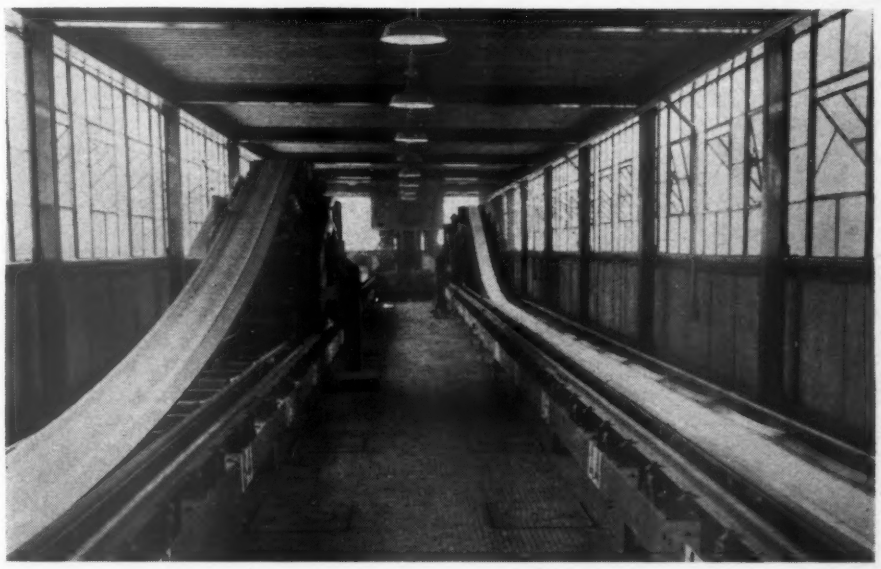
bins attached to the rock silo receive the dust. The dust and waste bins, eight in all, have their discharge spouts fitted with rubber collars through which the waste and dust enter a special tank-bodied truck which hauls it away at regular intervals. Pipe lines leading up from the loading spouts to the tops of the bins (which are constantly under vacuum since they are connected to the Multiclone circuit) serve to suck up any stray dust that may arise during truck-loading operations at the waste bins.

A 24-in by 158-ft. belt conveyor traveling beneath the granule bins carries the product to a head-house outside the building, at which point the load is transferred to another conveyor operating at right angles and running into the coloring building. Some dust is being generated at the head-house and a small Multiclone collector is being installed here to trap the dust.

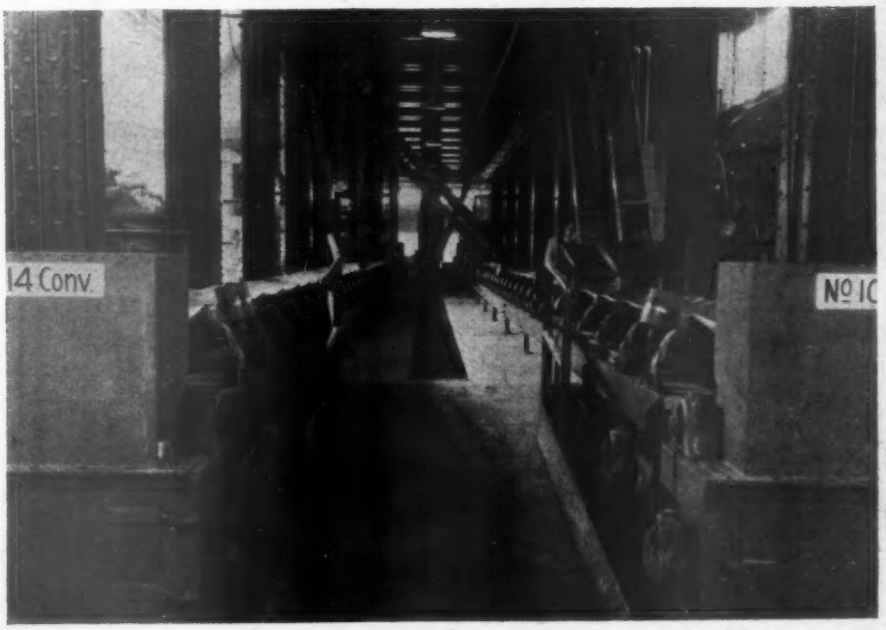
In the coloring plant, an elevator carries the granules up to an 80-ton surge bin which supplies the process equipment. Raw granules, plus oxides, chemicals and other coloring ingredients are carefully proportioned into a 3-ton measuring hopper which charges a mixer. After the mixing cycle is complete, the entire batch, its particles now uniformly coated with color, is dumped into a 5-ton feed hopper before being elevated to the rotary kiln.

The kiln, 7 ft. in diameter and 50 ft. long, is lined with firebrick. It turns at 3 r.p.m. and slopes 5/16 in. per ft. Counter current firing, using a North American gas-oil burner similar to the one on the dryer is employed. Here the pigment is permanently bonded on the granules. Exhaust gases discharge at about 600 deg. F. through a stack with a Buffalo exhaust fan in the circuit. A 6- by 40-ft. rotary cooler equipped with lifters and internal water sprays follows the kiln.

Elevated to the top of the building, the finished granule load is split and carried by parallel 18-in. by 131-ft. conveyors which run above two rows of tubelike finished storage tanks. There are 28 tanks, two rows of 14 each, of all-welded steel construction measuring 8 ft. in diameter and 35 ft. high. A tripper diverts the finished product into the



Conveyors over the two rows of finished storage tanks. Trippers feed through side spouts after the tank covers have been removed.



Recovery conveyors beneath the finished granule bins. Feed spouts permit discharge to either conveyor.

A special tank truck which disposes of waste fines and dust. The pipe in the center is connected to the bins, under vacuum, high above, and makes the loading operation dust-free.

proper tank, each of which has a capacity of 70 tons. The plant regularly produces granules in 12 different colors. It is customary to run continuously on a single color for 24 to 48 hours since considerable time is required thoroughly to clean the batching and mixing equipment at the end of each run to avoid contamination before a new color can go into production.

Gates in the bottoms of the conical tanks are electrically controlled and air-ram operated to feed, through swivel chutes, another pair of belt conveyors which recover the finished granules for elevation to the car-loading bins. Before entering the bins, however, a pair of Rotex clean-up screens gives the product a final sizing, scalping out any clinkered oversize and by-passing any unwanted fines which may have developed during the firing process.

The swivel chutes previously referred to serve another purpose besides merely feeding the conveyors for loading. They can feed the belt immediately below or are long enough to crossfeed to the opposite belt for blending, or to provide a 100 percent circulating load. This enables any tank to be emptied and its contents transferred to another tank storing granules of the same color which may be only partially full and allows the full storage capacity of the tanks to be utilized.

Granules are loaded into paper-lined box-cars, 50 tons to the car, by Stephens - Adamson centrifugal belt loaders fed by spouts from the loading bins. A small portion of the output is packed in paper bags.

Throughout the plant, equipment is operated by push-buttons controlling automatic interlocking switches on Square-D panels. A well-staffed and completely - equipped laboratory maintains close control of product quality, both physically and chemically, at every stage of manufacture. Samples are taken beginning in the quarry, through the processing plants and on into the loaded cars themselves. While a car is being loaded a sample is taken of every ton and composited while the loading progresses. Should the product be off color or deviate from company or customer standards in any respect at any point, it is taken out of production for re-processing.

There are two main plant structures, the crushing - and - screening building with machine shop attached, and the coloring building which incorporates a warehouse wing. It is recognized 3M practice to build solidly and substantially and the company carried out this policy to the nth degree at Corona where the ever-present possibility of seismic disturbance dictated extremely thick reinforced concrete walls and structural members, and extra-heavy steel. Plant offices are housed in a separate concrete-masonry building, air-cooled in the summer.

Motor horsepower in the plant totals about 1,300, power being purchased from the California Electric Co. All wiring is below ground. Fuel oil comes in by rail, the plant being served by the Santa Fe railroad, and is pumped to 20,000-gal. tank storage.

Water comes from two drilled wells, the Pomona pumps raising it through a cast-iron pipeline to two 50,000-gal. reservoirs located 200 ft. up the ridge near the quarry-floor level.

The kiln, cooler and dryer were built by the Standard Steel Co., Los Angeles. Conveyors were supplied by the Los Angeles plant of the Stephens-Adamson Mfg. Co. and use Goodrich belting for the most part.

The engineering design of the plant was carried out by the Roofing Granule divisional engineering group of the 3M Co. in close cooperation with the Roofing Granule production staff. Wm. P. Neil Co., Los Angeles, under the direct supervision of A. L. Nienaber, 3M construction superintendent, did the general contracting work. The architectural details were developed by a subsidiary company of the W. P. Neil Construction Co. under the direction of E. G. Boehm.

Headquarters of the Minnesota Mining & Mfg. Co. are in St. Paul. L. A. Hatch is vice-president in charge of the Roofing Granule Division; G. W. Swenson is division manufacturing manager; John A. Brown is chief geologist; W. E. Vroman is division engineer, and C. P. Pesek is vice-president in charge of engineering.

At Corona, R. E. Gundlach is the plant manager, having formerly served in that capacity at the Wausau plant. L. W. Kanninen is plant superintendent, W. E. Sparr is assistant superintendent, G. J. LaVenture is quality supervisor, and R. W. Trantow is office manager. The plant employs about 50 persons.

U.P. Stages a Train Wreck In the Interest of Safety

A freight train consisting of a locomotive, tender and two box cars was literally overturned in the interests of safety by Union Pacific railroad. This was revealed with the release by the company of the first of 41 prints of a 26-minute, 16-millimeter, sound-color motion picture on highway grade crossing accidents.

Climactic highlight of the film, entitled *Look, Listen and Live,* is a train wreck caused by a careless motorist. To make the realistic scene, a derrick was used to lay the entire train on its side on the right-of-way. Ambulances, highway patrolmen and leaping flames add color to the "tragedy."

The accident was staged at Denver, Colo.

Issued simultaneously by the railroad were 500,000 copies of a two-color, 12-page booklet, also entitled *Look, Listen and Live,* featuring the grade crossing demise of a pathetically-humorous pen-and-ink sketch character, Dizzy Dan.

Lawrence Portland Cement Announces Stock Transfer

James H. Ackerman, president of the Lawrence Portland Cement Company, has announced that all of the corporation's outstanding no par capital stock has been called in and will be exchanged for new $10 par common stock on the basis of three new shares for each one share of old stock held. Transfers are being made at the company's executive office, 150 Broadway, New York City.

This action is in accordance with a vote of the stockholders taken at a special meeting held December 16, 1948, changing the company's capitalization from 100,000 shares of no par common stock to 300,000 shares of $10 par common and providing for the exchange of new stock for old in the ratio of three for one. Since 75,000 shares of old stock are outstanding, the exchange will require the issuance of 225,000 new shares, with 75,000 shares still unissued.

The Honey Hole Sand and Stone Co. of Luzerne County, Pa., was ordered by the Pennsylvania State Sanitary Water Board to install a waste treatment system by April 1.

"Cleanest Deposit Ever Discovered" Facilitates High Output at Walker Plant

ON THE SPOT report

ONE of the interesting high-output sand-and-gravel plants in the west is the new operation of J. B. & R. E. Walker, Inc., of Salt Lake City.

The plant, with a capacity of 350 t. p. h., is unusual because of the extreme simplicity of design which, it is hoped, will permit the production of specification aggregates without the necessity of washing the material at any stage of processing. The owners describe the deposit as the "cleanest ever discovered on the face of the globe". This cleanliness is attributed to the fact that it is a peculiar stratified formation just below the prehistoric shoreline of Lake Bonneville, which once covered the entire state of Utah and a part of Nevada. All that remains today of this immense body of water, as its shorelines receded over hundreds of centuries of time, is the Great Salt Lake.

By HARRY F. UTLEY

Test borings over a wide area by the Walker brothers revealed this high-grade silt-free gravel and sand concentrated in a 300-acre area at the mouth of Big Cottonwood Canyon about 16 miles southeast of the Utah capital. Apparently washed and scrubbed by wave action as long ago as 50,000 B. C., the material lies in a bed about 200 ft. thick. The entire 300 acres is owned in fee simple by the Walkers.

• A plant view showing the preliminary pile of road gravel being stacked at the end of the 420-ft. conveyor. The discharge end of the conveyor is 75 ft. above the ground level.

The deposit is overlain by a thick, protective layer of gravel presumably washed down from the Wasatch Mountains in the intervening centuries. This covering layer would require washing before becoming marketable as aggregates but is, instead, being stripped, crushed, and sold as road material, making the clean sand and gravel below accessible.

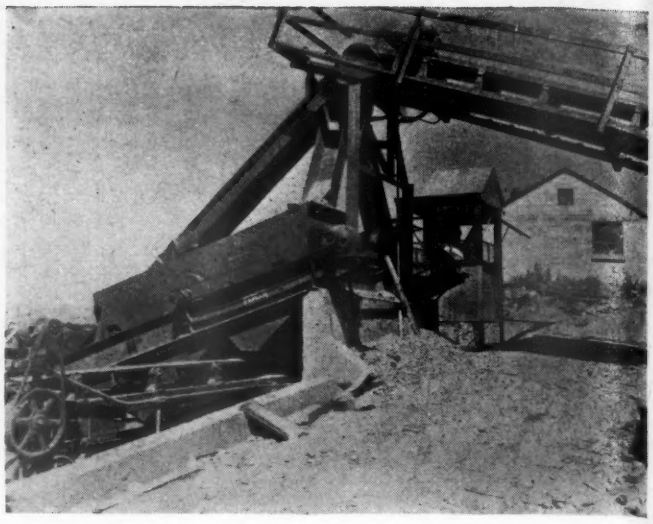
The plant is located on a hillside and its dominant feature, perhaps, is the arrangement of five all-steel stockpiling conveyors radiating from the crushing-and-screening equipment. These conveyors vary in length from 175 to 420 ft. and are from 50 to 75 ft. high at the discharge ends. They are steel supported and the total on-center lengths of the conveyor belts in the entire plant layout exceeds 2,000 ft. More than 350,000 lbs. of steel were used in fabricating the conveyor structures.

When visited late in the summer of 1948, the plant was nearing completion and the less desirable gravel and sand composing the "overburden" was already being stripped, its oversize crushed, and stockpiled for road material. Concrete-aggregates production is expected to be in full swing early in the spring of 1949.

The plant and the deposit are

• Right: This view, taken from the sand stockpiling conveyor, shows the plant and the hillside deposit above. The control house is at the left; the conveyor from the pit emerges from beneath the highway at the right.

• Below: In the foreground, the conveyor from the pit; below the jaw crusher. The length and height of the stockpiling conveyors are here clearly shown.

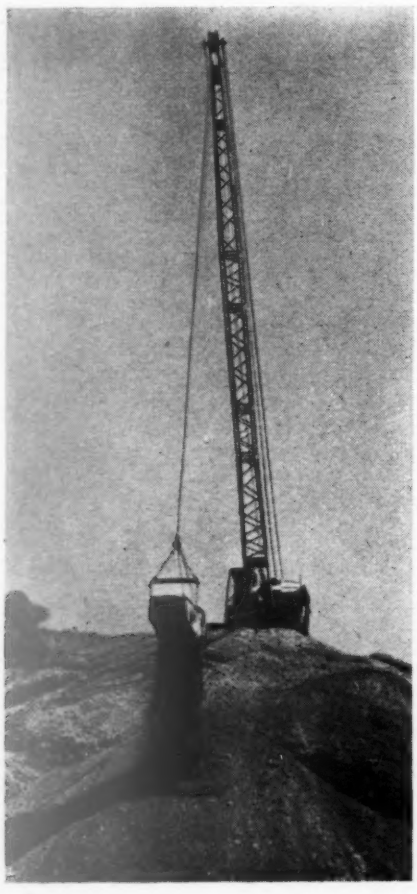


• Left: The conveyor feeding the scalping screen, with the roll crusher (left, below) in closed circuit.
• Right: One of the 4- by 12-ft. sizing screens. The control house is seen at the right.

separated by a county highway; and a Bucyrus-Erie 1-cu. yd. dragline, to be supplemented later on by a 3-cu. yd. shovel, loads downgrade to a feed hopper spanned by a 10-in. rail grizzly. A Pioneer 30-in. reciprocating feeder puts the material on a 30-in. by 100-ft. belt operating in a tunnel beneath the highway and discharging at the plant to a collection bin. Oversize is rejected before it can enter the bin by a grizzly sloped 55 deg. with bars spaced 2 in apart. Material scalped off is chuted to a Pioneer 15- by 36-in. primary jaw crusher. The crusher product joins the minus 2-in. materials in the collection bin at the point of feed to a 30-in. by 88-ft. belt conveyor running up to the screens.

There are three Pioneer 4- by 12-ft. double-deck sizing screens with a set of Pioneer 40- by 22-in. double rolls in closed circuit with either or both decks of the first screen in the series. The finished products consist of two grades of sand, three or four sizes of gravel ranging from 1½ in. downward, and asphalt-plant chips.

The five stackers, or stockpiling belts previously mentioned radiate from the screens in such a manner and for different distances so as to drop the sized material in a straight line above a long reclaiming tunnel. The third (central) conveyor is the longest, continuing onward for an additional distance of 180 ft. to enable the stockpiling of the road gravel beyond and out of the way of the aggregate storage piles. The transfer point is 240 ft. from the screening plant and when aggregates are being produced, this will be the point of discharge above the reclaiming tunnel, the additional 180-ft. conveyor section then being inoperative.



• Left: The dragline stripping the upper strata of gravel for use in road work.
• Below: A full-view closeup of the 40- by 22-in. double roll crusher. (Seen in profile in the view at the upper left of this page.)

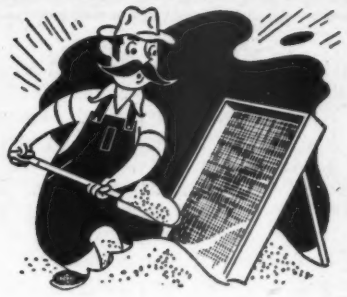
The reclaiming tunnel beneath the storage piles (total live storage capacity 60,000 tons) was built of reinforced concrete and is 6½ ft. high and 6½ ft. wide inside. Feed to the 24-in. by 460-ft. belt conveyor operating within is by 18- by 18-in. remote-controlled roller-bearing gates opened and closed by 3- by 18-in. Ledeen air cylinders. This conveyor will load a set of six steel truck-loading bins arranged in line and having a capacity of 372 tons. A remote-controlled tripper will distribute the sized material to the proper bins.

All production units are controlled from a switch-house at the plant, so located that the operator can view the entire operation from pit excavating to truck-loading of finished material. U. S. Rubber 4- and 5-ply belting was used on the conveyors, and G. E. motors with a total connected horsepower of 400, drive the equipment. The steelwork was built and unit-assembled in the Walker shops in Salt Lake City.

Aggregate production on a commercial scale is a new venture for J. B. & R. E. Walker, Inc., who have been heavy-construction contractors in Utah and the Rocky Mountain region for many years. After finishing a $380,000 contract for the construction of syphons for

(*Continued on page* 76)

Screenings



by William M. Avery

WE were in Washington on January 20, Inauguration Day, covering the 4th annual meeting and convention of the National Agricultural Limestone Association. Our ring-side reservation at the Capitol went astray somehow, so we watched the historic ceremony on a television screen in the South American Room of the Statler.

Harry looked fine on the television screen, and as far as we could tell he enjoyed the proceedings quite as much as the late Franklin Roosevelt always did, in spite of his more limited experience. By 1957, unless the two-term amendment gets ratified, we feel pretty sure Harry will have the whole business committed to memory. Maybe he'll even throw in a bit of variety by then, like taking the oath standing on his head while balancing the national debt on his right foot and the defunct 84th Congress on his left.

On second thought, maybe he'd better not wait until 1957. Not long ago the *Ladies Home Journal* subjected a group of youngsters to a photo-recognition test in which Harry ran a poor third. In first place was Dick Tracy, who was spotted instantly by 97 percent of the small fry. If Harry isn't careful, by 1956 those same youngsters may landslide Tracy into the White House. As matters stand right now, we think Dick may be the Republicans' only hope.

Bowl Me Over!

BOWL game impresarios are obviously having a bit of trouble dreaming up new names for their pet annual fracases. We thought a year ago that there were only a few remote possibilities left, such as "Wash," "Oatmeal" or "Punch," but hanged if they didn't bob up with a new one this year—the Cement Bowl game. This happy inspiration seems to have struck simultaneously at two widely separated points. An item from Allentown, Pa., announced that the first annual Cement Bowl game would be played there on December 4, and at approximately the same time San Bernardino, Calif., was making noises about staging a similar contest in the Orange Bowl Stadium.

There's some doubt in our mind about the legitimacy of a Cement Bowl game being played in the Orange Bowl, even though we realize that cement is a pretty scarce commodity these days. Apparently, the West Coast laddies felt the same way. Last we heard, anyway, they had decided to call the whole thing off, giving Allentown clear title to the name. Anybody happen to know if the game was played?

Concrete Evidence

NEW light is thrown on the shortage of portland cement by an item from Chicago. Owners of slot machines, illegal in Cook County, are filling the bases of their machines with concrete to discourage deputies from hauling them off to destruction dumps.

This reminds us that the last time we played around with one of the

local one-armed bandits we went away with a glum suspicion that the pay-off slot was loaded with concrete, too. Maybe we're witnessing the dawn of the Concrete Age.

Fine for Morgues, Though

A FRENCH architect is reported to have designed a new type of hospital bed in which the conventional metal framework is entirely replaced by hollow concrete blocks. It's probably a very sound idea, unless it's just another step in the general campaign to discourage people from long hospital sojourns.

If that's the objective, we don't think it'll work. At least half the country town hotels we stop in stuff their *mattresses* with masonry rubble, but you still can't get into them without a reservation.

You're Faded!

IN-PLANT gambling, according to Labor Relations Institute, is costing employers thousands of dollars year in and year out. An L. R. I. study of this weighty problem includes an easy-to-calculate formula to determine the actual cost to the employer in dollars and cents. Wouldn't it be lots simpler for the

employer to count his money at the beginning of the day and again at the end?

You'd think sooner or later employers would realize that they can't win, and would stop gambling with their employees.

Gravel Rush

FORTY-TWO point banner headlines on the front page of *The Stillwater Valley News* of Covington, Ohio, recently announced the breath-taking news that gravel had been discovered at the city's Community Park. So far as we can learn, no serious injuries were sustained in the ensuing stampede to stake out claims on the property.

NECROLOGY

In 1948, a number of men well known in the nonmetallic minerals industries and related fields passed away. Readers will find among the following obituaries the names of persons long familiar to them in the roster of American producers:

John Ahnfelt, 76, pioneer in the cement industry and, since 1918, operating manager for all Universal Atlas Portland Cement plants.

William M. Andrews, president of the Union Limestone Co., Newcastle, Pa.; former president of the National Crushed Stone Association.

Charles Baumberger Sr., 85, president of the San Antonio Portland Cement Co.; associated with the firm for 68 years and active president since 1897.

Max A. Berns, publicity manager for Universal Cement Co., United States Steel Corporation subsidiary, for 26 years; formerly president of the Advertising Council of the Chicago Association of Commerce.

Charles Boettcher, 96, founder and president of the Ideal Cement Co., Denver, Colo., often referred to as the "grand old man of the cement industry"; built the first sugar plant in the West, which later grew into the Great Western Sugar Co.

George A. Brewer, president of the Longview-Saginaw Lime Works, Inc., Birmingham, Ala.

Dr. Frederick Cottrell, 71, outstanding scientist and inventor of the Cottrell Electrical Precipitator; former director of the U. S. Bureau of Mines; past director of the Fixed Nitrogen Laboratory of the Dept. of Agriculture; winner of the 1937 engineering award of the Washington Award Commission; and founder of the Western Precipitation Corp.

Beulah M. Davies, former secretary to the engineering director of the National Crushed Stone Association.

Schuyler Hazard, 80, formerly chief engineer and general manager for the Orleans County Quarry Co. and the Medina Sandstone Co.

John A. Hoover, vice-president of the Beyer Crushed Rock Co., Kansas City, Mo.

Alfred F. Hyde, 85, chairman of the board of Consolidated Quarries Corp., Atlanta, Ga.

F. L. Jaeger, 70, former vice-president of Marquette Cement Manufacturing Co., Chicago, Ill.; associated with the firm for 30 years.

William B. Jones, president of the Dusquesne Slag Products Co., Penn.; formerly associated with the Standard Slag Co. of Youngstown, O.

Alfred F. King, 64, vice-president of the United States Gypsum Co., N. Y.

Frank M. Kelley, general manager of the Greer Limestone Co., Greer W. Va., for the last 12 years.

Edwin P. Lucas, formerly president of the Superior Portland Cement Co. and Bellingham Coal Mines, Inc., Seattle, Wash.

Joseph W. McFarland, 55, president and general manager of the National Gypsum Company of Canada, Ltd., Halifax, N. S.

William J. Muhlitner, 56, president of the Great Lakes Foundry Sand Co., Detroit, Mich.; director of the National Industrial Sand Association.

Philip Mooney, 46, assistant general manager of the Medusa Portland Cement Co., Cleveland, O.

Joseph C. Pearson, 68, retired research director of the Lehigh Portland Cement Co.; past president of the American Concrete Institute.

Sidney N. Peters Jr., 39, vice-president and director of the Lawrence Portland Cement Co.; successively served as assistant district sales manager in Philadelphia, district sales manager, company sales manager, and vice-president.

Chester E. Rahr, 67, former president of Certain-teed Products Corp.; past president of Flintkote Co.

George M. Richardson, 70, treasurer of the National Portland Cement Co.

T. Frank Robinson, 82, superintendent of the Beachville plant of the Gypsum Lime and Alabastine Co., Canada; associated with this company for 30 years; formerly with the United States Gypsum Co. for 30 years.

Maynard D. Smith, 71, one of the founders of the Peerless Cement Corp., Port Huron, Mich.

V. J. Valkenburgh, 57, president of the Blue Diamond Corp., Los Angeles; past director of the Los Angeles Chamber of Commerce.

Malcolm Watkins, superintendent of the Marquette Cement Company's plant at St. Louis, Mo., who died of injuries sustained at the plant.

W. S. Weston Sr., president and treasurer of the Weston & Brooker Co., Columbia, S. C.; member of board of directors of the National Crushed Stone Assn.

Livingston Bruns Yourtee, 46, general manager of the Yourtee-Roberts Sand Co., Chester, Ill.

Program Makers Announce 45th A.C.I. Convention

Except for a few details which will be filled in later, the broad outlines of the American Concrete Institute's 45th annual convention program have been determined. Headquarters will be New York's Hotel Statler, and dates are February 23, 24 and 25.

The general session on February 23 will deal with (a) regional concrete paving problems of construction and maintenance and (b) air entrainment in concrete. Speakers will include B. D. Tallamy, superintendent of the New York State Department of Public Works; Charles M. Noble, chief engineer, New Jersey State Highway Department; J. F. Barbee, Ohio State Highway Department; and Robert F. Blanks and W. A. Cordon of the U. S. Bureau of Reclamation.

C. P. Siess, Nathan M. Newmark, Frank E. Richart and Robert Glover will present addresses during the second general session on February 24, which will be devoted to structural problems in the advancement of reinforced concrete. Problems in the production and use of ready-mixed concrete will be considered at the technical session that afternoon.

On February 25 S. J. Chamberlin, chairman, and George W. Washa, secretary, will preside over the annual session of Committee 115 on research. The final session will feature papers on cast-in-place architectural concrete by John J. Hogan, E. B. Oberly and A. J. Boase (co-author), all of the Portland Cement Association. Ralph W. Kluge, Purdue University, will present Bureau of Standards findings on lightweight aggregate concrete.

"Cleanest Deposit"

(*From page* 74)

the Bureau of Reclamation near Provo, Utah, a few years ago, the firm had a couple of perfectly good batching plants on its hands. Rather than dispose of these, or retain them for possible future use on a similar construction job at considerable expense, the company officials decided to utilize them in the production of commercial ready-mixed concrete. One unit, a fully-automatic Noble plant with bulk-cement facilities, was set up near downtown Salt Lake City. The other plant was established at American Fork, Utah. Difficulties in obtaining a dependable supply of aggregates had a lot to do with the company's decision to enter the aggregates business and the subsequent erection of the plant here decribed.

Another batch plant is also planned for the new plant at Big Cottonwood Canyon. Smith and Jaeger truck-mixers are used to deliver the concrete.

Operation of Power Shovels, Draglines And Similar Equipment*

This industrial data sheet is one of a series published by the National Safety Council. It is a compilation of experience from many sources. It should not be assumed, however, that it includes every acceptable procedure in the field covered. It must not be confused with American Standard Safety codes; federal laws; insurance requirements; state laws, rules and regulations and municipal ordinances. Reprints of all data sheets are obtainable from the National Safety Council.

SAFE operation of power shovels, draglines, cranes, and similar equipment not only means fewer serious injuries to employees but also eliminates delays and costly damage to equipment. Often the same factors cause accidental injuries, interruptions in loading, and expensive repairs.

In General These causes, in general, may be eliminated by regular inspections of the equipment, good maintenance, use of personal protective equipment, and training of employees in safe practices.

Systematic procedure for safe operation and efficiency begins with the purchase of equipment. It is advisable to have guards over gears, safe oiling devices, handholds, and other safeguards installed by the manufacturer.

In no case should equipment be put into operation without a thorough inspection, followed by installation of whatever safety devices may be necessary.

Installation of a good grounding system for preventing injuries and deaths from contact with electric current is one of the first steps in putting electrical equipment into operation. Grounding should protect workers from electrical faults in trailing cables and at the shovel.[1]

Periodically, preferably monthly, circuit breakers and other devices in the grounding system should be inspected and tested and the resistance of the ground should be checked. A megger test of the cable insulation is a recommended part of cable inspection. Also, it is advisable to examine the cable after each blast for damage to insulation. Defective cable insulation should be *vulcanized*, not taped.

If the grounding method does not give adequate protection in the handling of trailing power cables, workmen should be provided with rubber gloves and insulated tongs or hooks. Suitable tongs are shown in Figure 1.

Minimum wear and damage to trailing cables is highly desirable for safety and economy. Overhead feeder lines, should be extended as close to operations as practical so that a minimum length of trailing cable is used. Keeping cable off the ground, especially during wet weather, and using minimum lengths increase its life.

Tripods and horses can be used to keep cable off the ground. Where cables cross roads, tripods are preferable to trenches. Surplus cable can be stored on a sled or reel mounted on the shovel.

Night operations require floodlighting approximating daylight around a shovel. (See Figure 2.) A floodlight on the boom is especially helpful to the operator. Good lighting in the interior of a shovel also is necessary.

In some quarries a bulldozer keeps loose material within reach of the shovel and is otherwise used for general housekeeping.

Good housekeeping and good equipment kept in repair are not enough for safety; in addition, the operator must be carefully selected and thoroughly trained. He should be intelligent, reliable, and thorough. Sobriety, willingness to follow instructions, and no tendencies toward recklessness are other essential characteristics.

Physical defects, such as a weak heart or poor eyesight, may be factors in accidents. Therefore, a preemployment medical examination, followed by periodic examinations, is recommended for operators.

The establishment of a definite procedure for inspection (required daily by some companies) and maintenance of equipment are recommended whether equipment is new or old. Generally, the operator is responsible for inspecting the mechanical condition and reporting unsafe conditions.

An inspection list should include brakes, clutches, clamps, hooks, floors (for grease and oil), running boards (for ice and other slippery conditions), and handholds.

Electrical parts of shovels, including trailing cables, should be inspected and maintained by an electrician.

A special inspection of suspension cables, including fastenings, should be made at least once a month because failure of these cables may cause serious accidents and property damage. Hoisting cable is particularly likely to show wear at cross-over and change of layer points on drums. The cable should be securely fastened to the drum, and there should be at least two full turns on the drum at all times.

Maintenance Maintenance work, such as repairing and adjusting, is a major source of accidents which result in injuries. A study made by the U. S. Corps of Engineers shows that the severity of such injuries is high, the average time charge per lost-time case (excluding fatalities) being about 240 days. Therefore, supervisors, repairmen, and operators should realize the hazards and strictly follow safe practices.

When the operator makes repairs and moves or leaves the equipment, it is his responsibility to set the brakes, secure the boom, lower the dipper or bucket to the ground, take the machine out of gear, and do whatever else is necessary to prevent accidental movement.

Before making repairs or adjustments, an operator should be sure also that the equipment is in a safe position where it will not be endangered by falling or sliding rock or earth. Accidents in which men are injured and shovels damaged often occur when the shovel is shut down for repairs too close to the face. Such accidents are likely to occur if the rock formation is faulted or develops cracks extending back from the face after blasting.

Before undertaking any work, repairmen should notify the operator

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[1]Details about grounding are contained in manufacturers' instructions, and information is available from the National Safety Council. One company has developed a particularly effective method of grounding mobile electrical equipment; for the details of the system, see *Safety Reprint Mining No. 2*, published by the National Safety Council.

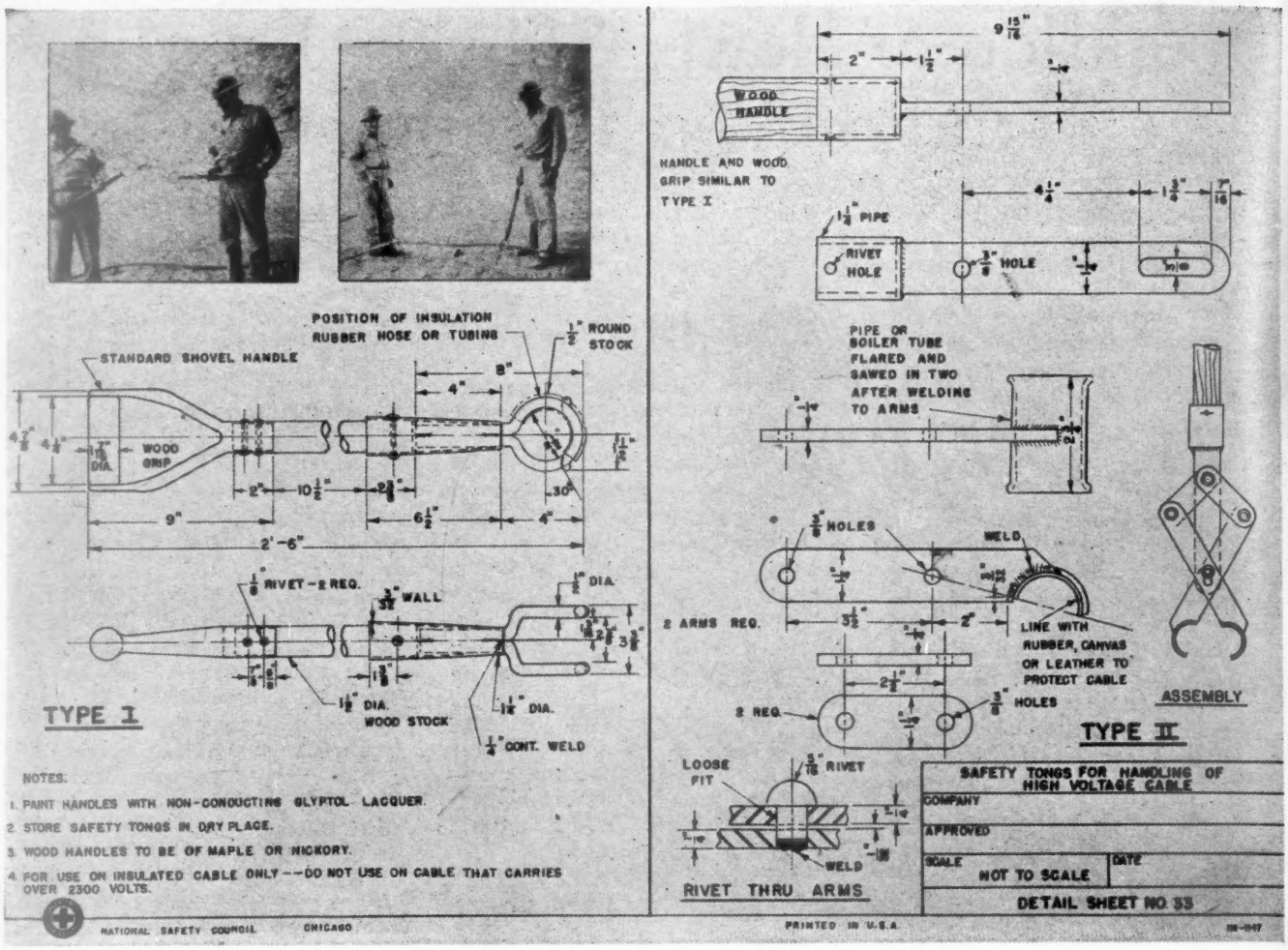

POSITION OF INSULATION RUBBER HOSE OR TUBING
STANDARD SHOVEL HANDLE
WOOD GRIP
TYPE I
WOOD HANDLE
HANDLE AND WOOD GRIP SIMILAR TO TYPE I
PIPE
RIVET HOLE
HOLE
PIPE OR BOILER TUBE FLARED AND SAWED IN TWO AFTER WELDING TO ARMS
HOLES
WELD
2 ARMS REQ.
LINE WITH RUBBER, CANVAS OR LEATHER TO PROTECT CABLE
ASSEMBLY
TYPE II
LOOSE FIT
RIVET THRU ARMS
NOTES:
1. PAINT HANDLES WITH NON-CONDUCTING GLYPTOL LACQUER.
2. STORE SAFETY TONGS IN DRY PLACE.
3. WOOD HANDLES TO BE OF MAPLE OR HICKORY.
4. FOR USE ON INSULATED CABLE ONLY--DO NOT USE ON CABLE THAT CARRIES OVER 2300 VOLTS.
SAFETY TONGS FOR HANDLING OF HIGH VOLTAGE CABLE
COMPANY
APPROVED
SCALE
NOT TO SCALE
DATE
DETAIL SHEET NO. 33
NATIONAL SAFETY COUNCIL CHICAGO
PRINTED IN U.S.A.

Fig. 1. Construction details for making safety tongs to handle high voltage cables.

about the nature and location of the job. If work is to be done on or near moving parts, the controls should be locked out or tagged. The lock or tag should be removed only by the repairman. Unless these precautions are taken, operators may start equipment and seriously injure repairmen.

These precautions are essential also when such parts as the tracks on which small shovels revolve are to be oiled and greased.

Permanent disabilities frequently result from accidents which occur when work is being done on or around gears, sheaves, drums, and similar parts in motion. If these parts *must* be in motion while work is being done on or around them, they should be turned slowly by hand, if possible.

Maintenance men frequently are caught by moving gears when the guards are removed for convenience in making repairs. Oiling or greasing may be done safely if devices designed to keep the operator's hands at a safe distance are used.

Men also take hold of the cables just ahead of the sheaves, and their hands are jerked into sheaves. To guide cable being wound on a drum, a bar should be used. The drums turn too fast for the hands to be used safely.

A repair job on a shovel is not complete until guards, plates, and other safety devices have been replaced.

Handling heavy parts of equipment often results in strains, toe fractures, and other injuries.[2] The awkward position necessary for making repairs increase the likelihood of these injuries.

By providing sufficient help and suitable materials for blocking, the foreman can make this work safer and easier. The men should be trained to bend the knees, not the back, when lifting, to take a good grip, and to follow other safe handling practices.

Gloves and loose clothing are unsafe dress for repairmen, especially when they are working around slowly moving parts. Loose trousers, for instance, can be caught and jerk the feet into moving drums or gears.

It is essential that repairmen wear safety shoes. They should also wear goggles, especially when they use hammers and other shock tools.

[2]Some companies use a crane mounted on a truck for heavy repair work.

Operating Practices A sound procedure in training operators to work safely is to stress the practices that eliminate the most frequent and serious accidents, and to require observance of these practices.

A shovel may be utilized effectively to eliminate frequent serious injuries and property damage from falls of rock.[3] Large rocks close to the face, for example, may be set out in a safe place for drilling.

Since operators and their helpers are frequently struck by falling rock, they should be trained to examine the face for loose rock and should be careful to avoid dangerous slides, which may also damage the shovel and stop production.

Some slides are ascribed to "unusual conditions," such as a faulted rock formation. Frozen or frosted chunks of ore, sand, and similar materials are very dangerous. Frozen banks of such materials should not be undercut. The operator should be familiar with unusual conditions and know how to offset the dangers.

Operators should know and observe the load limits of the equip-

[3]Other ways of using a shovel are described in Industrial Data Sheet Cement and Quarry No. 2, *Falling or Sliding Rock in Quarries.*

Fig. 2. Floodlighting equipment for night operations at the Marquette Cement Manufacturing Company's quarry at Oglesby, Ill.

ment. Bad accidents have resulted when booms on draglines and cranes collapsed because of overloading. The manufacturer's limitations for loads at various angles of the boom should be strictly observed.

That heavy loads may cause overturning is especially likely on soft or sloping ground. The crane should always be level before it is put into operation.

Some operators of small shovels, when digging, attempt to take too large a bite, thereby using excessive power. This unsafe operating practice causes the machine to pitch so that the operator and the oiler are thrown against the frame or other parts of the machine with the possibility of injury.

Buckets and dippers should be filled to capacity but not to overflowing. Rock falls endanger workers and equipment and cause excessive spillage.

All workers should be aware of the possibility that rock may fall when dippers are filled and swung. A good operator does not swing a load over an engine and does not load a truck until the driver has dismounted and is in the clear, unless the cab is designed to protect the driver.

Loading should not be done from the blind side. Cars and trucks should be loaded evenly so that earth or rocks do not overhang the sides.

An operator has responsibility for the safety of other men working around the equipment. It is essential for him to observe and keep constantly in mind the positions of other workers and for him not to move or swing the equipment while the men are in dangerous locations. Otherwise, they may be struck by falling rock, squeezed between the shovel and the bank or similar pinch point, or struck by the dipper or other parts of the equipment. One company has equipped the shovel with a siren which the operator blows before any special movements are made.

The men in turn should warn the operator not to move equipment while they are in a danger zone. Warning signs may be placed if clearance between the equipment and the bank or car is too narrow to permit a man to pass safely.

Employees who fail to notify the operator and attempt to get on or off equipment while it is in operation incur frequent and, in some cases, serious injuries. Accident experience justifies a strict rule that only authorized workmen should be allowed on shovels.

Fig. 3. Jumping from mobile equipment causes frequent injuries.

Operators, oilers, and other workmen sustain numerous injuries when they jump from the shovel to the ground (see Figure 3), fail to use a handhold or steps, and do not keep running boards clear of ice and snow, grease, and other substances causing slippery conditions. The safe practice is to look for round pebbles, holes, ice, and similar unsafe conditions before stepping on or off.

Slips and falls happen on other types of equipment also unless housekeeping is neat and orderly. Housekeeping is primarily the responsibility of the operator.

Extreme care is essential when machinery is being operated near power lines. Each year operators and other workers are killed because of failure to keep the boom at least ten feet from electric lines.

Hoisting work, such as moving of track, require the following important precautions:

a. Standard crane signals should be used.

b. No load should be lifted without a signal and until all workers are in the clear.

c. A signal to raise should not be given until the hooks or chains are properly secured.

d. If the hooker is not clearly visible to the operator, an intermediate signalman should be posted.

e. To fasten a hook to a bucket, the hook should be grasped at the top.

f. Loads should be lifted vertically so that they will not swing.

Summary Since power shovels, draglines, and similar equipment are frequently involved in minor and major accidents, their condition and use should receive special attention in a safety program. (See Figure 4.) Inasmuch as many of these accidents also result in damage to equipment and loss of production, increased efficiency may be expected from effective safety measures.

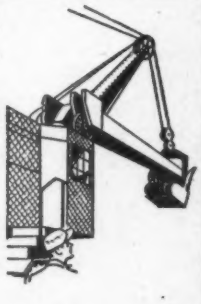
These measures should include:

a. A systematic inspection procedure for checking new equipment, inspecting cables, brakes, and other parts regularly, examining and testing the ground system periodically,

(*Continued on page* 91)

POWER SHOVELS, DRAGLINES, etc.
(Operation)

1. Do not overload buckets or booms.
2. Do not undercut the bank.
3. Before hoisting track or materials, give a signal and wait until all workers are in the clear.
4. Never swing a load over an engine or a truck until the driver has dismounted and is in the clear.
5. Load trucks or cars evenly so that material does not overhang the sides.
6. Shut off the power and secure all movable parts before you repair or leave your machine.
7. Use the handhold in getting on or off equipment. Do not jump.
8. Keep floors and running boards free of grease, ice, and debris.



SAFETY INSTRUCTION CARD No. 696
National Safety Council PRINTED IN U.S.A.

Fig. 4. Safety Instruction Card No. 696 is a concise summary of safe operating rules for employees.

Muddy Farm Lane Leads to Successful Slag-Crushing Business

• A load of slag is dumped into the feeder to begin the primary crushing operation at the Lebanon Building Block Aggregate Corporation's plant at Lebanon, Pa.

A MUDDY farm lane in 1936 was responsible for one of Eastern Pennsylvania's fastest growing slag crushing operations.

Twelve years ago Albert Fried cussed every time he had to drive over the lane in wet weather to get to his farm near Lebanon. In desperation, he bought some slag from the Lavino furnace at Lebanon and packed it in his lane.

Month after month, rain after rain went by and Al had no more lane trouble. He became an admirer of slag and had tests made by the Lehigh Portland Cement Co., for density, compression, etc. He learned that slag is a blast-furnace waste product, and that slag was used for building blocks, roofing, road building and drainage.

In 1945 he bought a slag "mountain" from the Lavino furnace, which had since moved to Sheridan. It was a 90-year-old mountain with more than 1,000,000 tons of slag.

Al built a plant to crush slag for building blocks and roofing, and it wasn't long before the Pennsylvania Department of Highways came a-knocking at his door. No one was crushing slag to specifications in eastern Pennsylvania. Al said he'd have to go at it, and before long he was producing thousands of tons of slag for road ballast and tile drainage.

Today, three years later, Al has

• The plant, viewed from the top of the bin building. The covered conveyor carries the slag from the crusher to the bin building.

used 300,000 tons of his slag mountain and figures he has less than two years to go at his present rate of production. Then he's going to purchase a new mobile plant for use at another nearby 5,000,000-ton slag pile and really go to work.

When his Lebanon Building Block Aggregate Corporation began crushing three years ago you could practically shovel from the mountain to the crusher. Today the mountain has "moved." Six trucks keep the slag moving from the face to the crushing plant.

Al says they blast twice a year, using from 30 to 40 holes. Two PH 1½-cu. yd. shovels work at the hill constantly. Trucks unload into an electrically-operated Universal apron feeder. Here big chunks of iron are pulled out by hand. The slag is carried toward the crusher on a 50-ft. conveyor with a 36-in. belt. Al's men built this conveyor using Jeffrey troughing idlers. At the top of the conveyor a Ding's magnetic pulley yanks out small bits of iron ore and dumps them into a small surge hopper. Reclaimed iron ore amounts to about 2 percent of the slag.

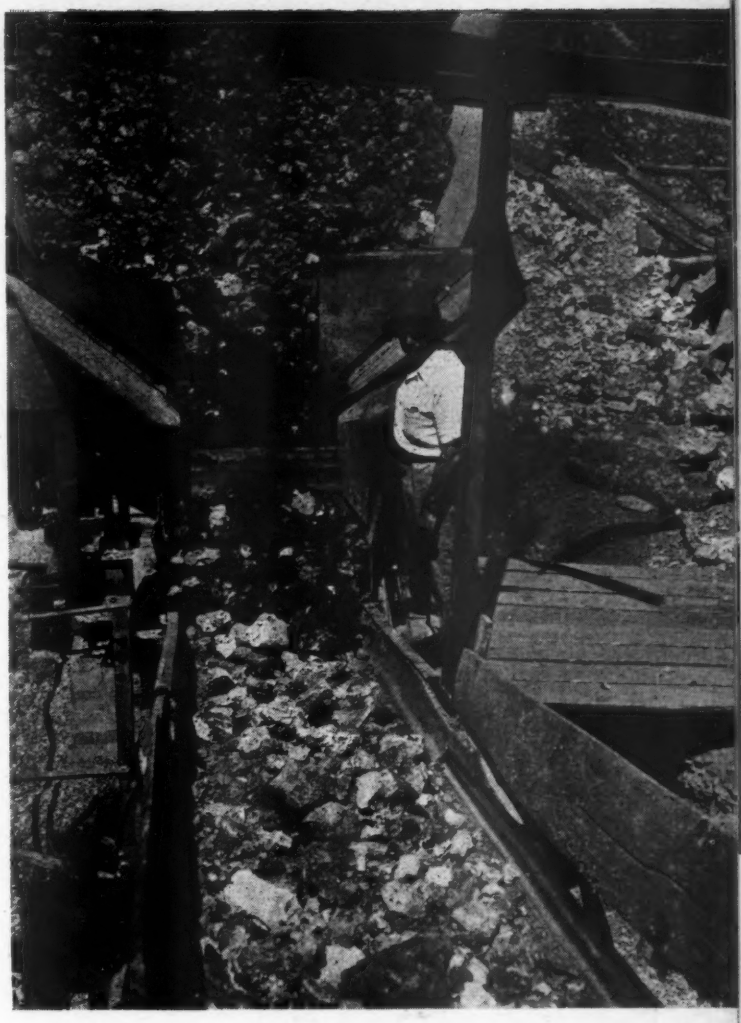
Before entering the crusher the slag goes over a grizzly which bypasses everything under 3½ inches to the bin conveyor. The plus-3½-in. slag drops into a feeder and then into a New Holland Model 3030 double-impeller breaker. This breaker has been in constant use for more than two years without any replacements or repairs, according to Al.

The crushed slag is discharged into another 24-in. conveyor which carries it 220 feet to screens atop the concrete bin building. Two 3-deck New Holland vibrating screens feed six 150-ton bins. The screens can produce seven aggregates, 3½-, 1½-, ¾-; ½-, ¼-in. dust and oversize. Each bin is 50 feet high, 65 feet wide and 20 feet deep.

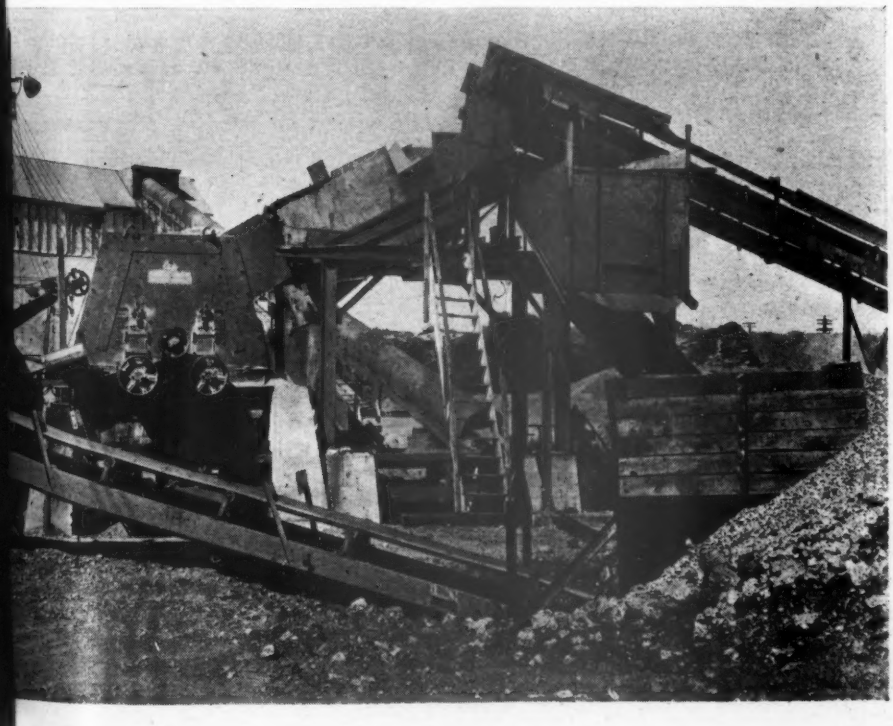
Oversize is trucked to a 24-in. conveyor which carries it 50 feet to a Universal 40-24 roll crusher. Here an Eriez magnetic pulley removes any remaining iron ore from the oversize. From the roll crusher, the aggregate is carried on an 18-in. belt 100 feet to a New Holland 2-deck screen atop a 45-ft. bin.

With this plant, Mr. Fried is now producing an average of 6,000 tons a week of all sizes of aggregate. Con-

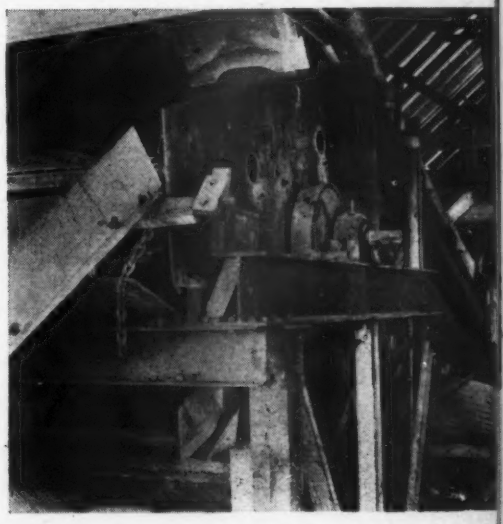
(*Continued on page* 91)



• General Manager Al Fried takes a turn at handling the chute where the slag is dumped onto the conveyor leading to the double impeller breaker.



• The double impeller breaker (left) is fed from the conveyor which sends the slag over the grizzly and into the feeder. Crushed slag is picked up by the conveyor (background) and carried 200 feet to the top of the bin building.



• One of the two triple-deck vibrating screens which feed six 150-ton bins.

Report on Current Labor Developments

FATE OF THE TAFT-HARTLEY ACT

AS was expected, the President in his State of the Union message called for repeal of the Taft-Hartley Act. He went on to say, "The Wagner Act should be re-enacted. However, certain improvements which I recommended to the

By S. HERBERT UNTERBERGER

Congress two years ago, are needed." These improvements would prohibit jurisdictional strikes and unjustified secondary boycotts, would prevent the use of strikes to decide issues arising out of the interpretation of contracts, and would provide a method for settling strikes in vital industries which affect the public interest.

An early struggle developed over the procedure for accomplishing this. The labor leaders wanted the Wagner Act reinstated first and the "improvements" to follow in subsequent legislation. This would not only have given them speedy elimination of the disliked Taft-Hartley law but, with that law off the books, they would be in a much stronger bargaining position with respect to new legislation.

For just the opposite reasons, the defenders of the Taft-Hartley Act, led by Senator Taft himself, wanted all the labor legislation wrapped up in one package.

The Administration and the Administration men in Congress are torn between their desire to redeem their pledge to labor that the Taft-Hartley law would be repealed and their fear that such an outright repeal would leave the Administration without weapons to deal with strikes in vital industries while new legislation to cover this problem is being debated.

It now appears quite unlikely that the labor leaders will have their way. It is probable that the repeal of the Taft-Hartley Act and the new legislative provisions will all be considered together. This will require hearings, and extensive debates may follow. Final passage of a new labor law may be delayed for some months. The earliest estimates expect the new law by March, but more realistic estimators set the date in May.

Businessmen should recognize that they will continue to be governed by the provisions of the Taft-Hartley Act for some months to come.

The Closed Shop Decision

Even if the Taft-Hartley Act is repealed, so that closed shop agreements again become legal, employers in 12 states will, nevertheless, be prohibited by law from signing such agreements. This was determined by the Supreme Court, when it upheld the constitutionality of closed shop bans in Arizona, Nebraska, and North Carolina. On the basis of this decision, it is likely that similar measures in force in Arkansas, Florida, Georgia, Iowa, North Dakota, South Dakota, Tennessee, Texas, and Virginia are also constitutional. Finally, the closed shop and union security provisions of the Taft-Hartley Act would, in all probability, be upheld, as well.

The Supreme Court held that outlawing the closed shop did not violate the Constitutional rights of freedom of speech, assembly or petition, nor is it in violation of the guarantee of due process of law.

So long as the Taft-Hartley Act continues in effect this ruling has little practical significance since that federal law bans the closed shop in all states. If that part of the Taft-Hartley Act is repealed, employers may be in for some difficulty. Those who operate in only a single state will, of course, be governed by the law of that state. Those employers, however, who operate in several states will find that a contract which is legal in one place will not be legal in another. Besides, the labor unions will be urging that in multi-state operations the state laws do not govern. It will no doubt require another decision of the Supreme Court to straighten out the confusion.

Not Covered by Federal Labor Law

The National Labor Relations Board recently refused to take jurisdiction over a case involving the Texas Construction Material Co., a concern engaged in the production, sales and distribution of sand and gravel. The Board held that the operations of the company were essentially local and therefore did not affect interstate commerce. That the NLRB refused to take jurisdiction in this case does not necessarily mean that it will treat every sand and gravel company this way.

The special facts in this case which called forth this decision were as follows: During one year all of the employer's sales, amounting to approximately $1,200,000, were made to purchasers within the state, and none of the materials were shipped out of the state. During the same period, the employer purchased supplies and equipment valued at about $445,000, of which only $14,000 worth was purchased outside the state. It included no raw materials. While most of the equipment was manufactured outside the state, it was purchased from dealers inside the state. The employer's principal customer was a ready-mixed concrete concern whose product was used for local construction exclusively. He had some other customers who used the sand and gravel for construction purposes including highways and bridges, and for resale.

This concern enjoyed a very special set of circumstances which prompted the NLRB to find that its relationship to interstate commerce was remote.

Independence of FCS at Stake

The Taft-Hartley Act established an independent Federal Mediation and Conciliation Service. It took the function of mediating labor disputes out of the U. S. Department of Labor, where it had been for some 34 years. This was done principally to answer the criticism that the mediation function required complete impartiality. (Obviously, impartiality could not be expected from employees of the Department of Labor, whose principal function was to represent the cause of labor in government councils.)

Cyrus S. Ching, former vice-president in charge of industrial relations of the United States Rubber Co., has been its director since its inception as an independent agency. While there has been little criticism of its operation as an independent service, there is a possibility that the agency will be returned to its former status in the Department of Labor. This results from the fact that the new Secretary of Labor, Maurice J. Tobin, has been promised that his department would be strengthened and enlarged. Reacquisition of the mediation service would, of course, be such an enlargement.

On the other hand, there are important considerations which may result in its continuation as an independent agency. Separation of the

(*Continued on page* 91)

Important Questions . .

about iron and steel scrap for every top business man in every industry

Q. ***How* bad *is the shortage of scrap?***

A. Actually, we have enough scrap to get along, but too much of it is *light* scrap. What is badly needed today is more *heavy* scrap.

Q. ***Why more* heavy *scrap?***

A. Because heavy scrap will produce *more and better* steel in *less* time.

Q. ***Why is the heavy scrap shortage so* harmful *to our economy?***

A. Half of all the ingredients that are melted to make steel and castings consists of scrap iron and steel. The short supply of heavy scrap during the past year limited the production of steel mills and foundries. At the present record rate of production, there is still not nearly enough steel to meet the current and anticipated demands of our domestic economy, military requirements, and ERP. More heavy scrap will help bridge the gap.

Q. ***What's being* done *about it?***

A. A drive . . . and everybody is cooperating . . . is being started for industrial scrap, to (1) help step up present steel production, and (2) *create a visible reserve of heavy scrap in the event of national emergency.*

Q. Why *is there a shortage of heavy scrap?*

A. Several reasons:

1. Very little of the 123,000,000 tons of steel and steel products exported during the war has come back as scrap.
2. With replacements scarce and expensive, much old equipment which would normally have been junked by now, is still in use.
3. A halt has been called on the junking of old vessels and military equipment which has until recently been a source of scrap.
4. The amount of heavy scrap produced in fabrication —the left-overs of machinery, etc.—is not enough to meet the demand for new steel and castings.

Q. ***How about the heavy scrap that must exist in huge quantities in* Germany *and* Japan?**

A. Some of this will be coming through, but not in good quantities until preparation and transportation facilities within those countries improve.

Q. ***Where can* additional *scrap be obtained from domestic sources?***

A. From industrial plants which have on hand large amounts of heavy scrap in the form of obsolete machinery, idle equipment—tools, dies, jigs, fixtures, etc.—and unnecessarily large repair parts inventories. Such scrap is the best possible type for the manufacture of quality steel.

Q. ***Isn't such material* ordinarily *turned in as scrap?***

A. Experience shows that plant "housekeeping" is not particularly good when plant production is high. People are too busy. However, if executives realized the critical situation, they would order the necessary steps to be taken.

Q. ***How can I help in this drive?***

A. Appoint one top official in your plant as a Salvage Director —with full authority to give orders and throw out everything that is not going to be needed. Have him consult with your trade association's Steel Scrap Drive Committee. Call in your local scrap dealer. (Incidentally, the prices paid for scrap are the highest ever.) Promote your scrap drive by meetings of department heads and through plant bulletin boards and newspapers.

Q. ***How do I benefit from moving scrap in addition to the money received for it?***

A. 1. You get the use of much-needed and expensive floor space now occupied by such equipment and material.
2. You eliminate the cost of keeping records and inventory.

Q. ***When does the scrap drive* start?**

A. Right this minute. The very next thing to do after reading this page, should be to start *your* plant's scrap drive!

Q. ***What is the goal of this drive?***

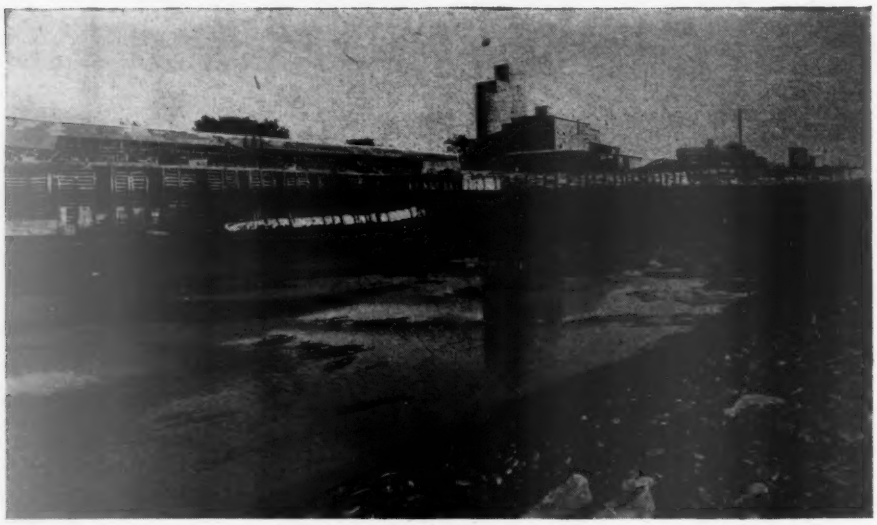
A. One million tons of *heavy* scrap . . . and "housecleaning" in your plant will help.

A PUBLIC SERVICE PROJECT · THE ADVERTISING COUNCIL

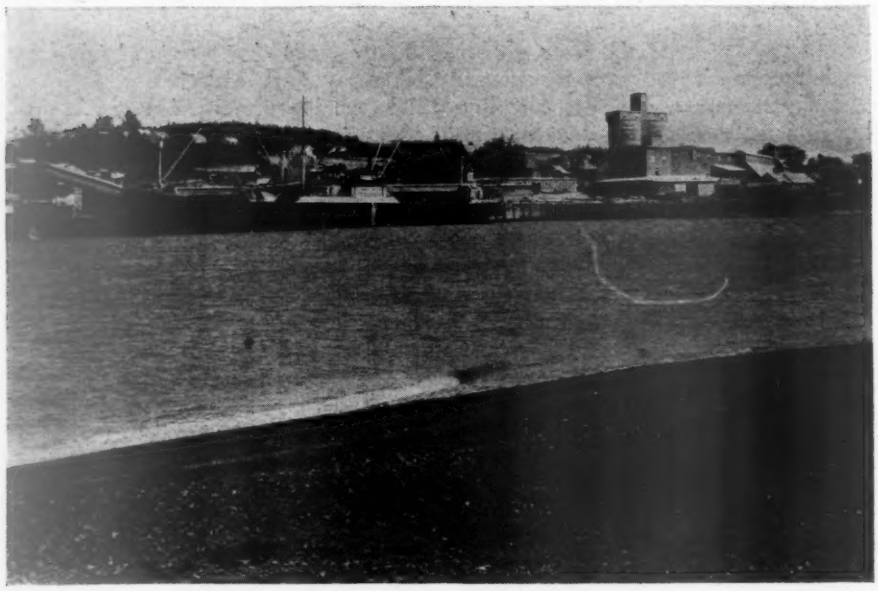
SCRAPPY SAYS:

Search your plant for HEAVY SCRAP . . . Help make MORE STEEL!

PIT and QUARRY



• Scene showing the port at Walton, Nova Scotia, at low tide showing the dock and loading conveyor, the mill, the storage bin and the machine shop of Canadian Industrial Minerals, Ltd.



• A view of the same port scene at high tide, with a vessel loading barite.

• A Dutch ship loading barite at Walton for shipment to a destination on the Persian Gulf.

Canadian Uncovers

IN 1941 the Canadian government asked gold mining companies to seek deposits of badly needed strategic minerals and metals, and for this reason Springer, Sturgeon Gold Mines sent prospectors to Nova Scotia to investigate reported occurrences of manganese. They did not find any good deposits of that war mineral but did locate a huge deposit of high-grade barites near Walton, on the shores of the Bay of Fundy. As Germany had been the world's principal supplier of barite for oil well drilling, this discovery was timely.

Canadian Industrial Minerals Limited was formed as a subsidiary of the gold mining organization, and the deposit which outcropped three miles from Tidewater was extensively diamond drilled to prove quality and quantity of the ore. Results were highly satisfactory. An open-pit mining operation was started, a modern mill was erected, docks were enlarged and handling equipment was installed. The company went into production in 1942, five months after the mine was opened. The whole operation was powered by electricity.

This mining-milling-shipping operation has some rather unusual features. The ore is easily won by quarry mining, delivered by trucks to the mill, processed and loaded on ships in Walton port. The high tides of Fundy dictate the shipping schedule. Vessels come in during the brief hours of high water, drop down on wooden cradles on the harbor floor during the low tide and go out again on the flood. Even the ship captains admit that the procedure is unusual.

There is an unique labor arrangement. Naturally, shipping of cargoes is not continuous and ordinarily stevedoring would be a problem, but Nova Scotians are all ship-wise people. Farmers, fishermen and laborers of the neighborhood assemble to work any hours necessary to meet the tide schedules.

Mining of the deposit started out as an open-pit operation to which the size of the exposed ore body lent itself admirably. As the pit deep-

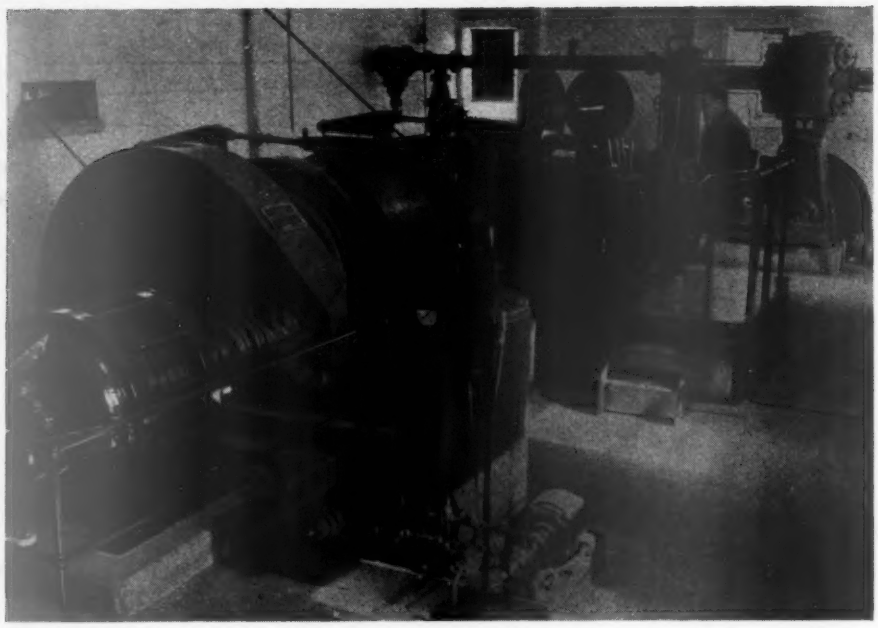
Gold Mining Project Huge Barites Deposit

By W. J. Gorman

ened it became apparent that a combination of open-pit and underground mining would be desirable, and the two systems are presently used. Following surface stripping by bulldozers the ore is mined by benching, using Ingersoll-Rand wagon drills. The blasted, broken ore falls into the pit bottom, where it is either loaded into trucks by a 1½-cu. yd. Bucyrus-Erie shovel or bulldozed into inclined raises connecting with the 270-ft. level haulage drift. The bulldozer pushes the ore onto grizzlies made of rail sections, the larger sizes being reduced by small explosive charges. The inclined raises are fitted at level elevation with mechanical gates, the ore loaded into 2-ton side-dump cars which are hauled to the shaft by electric locomotive. The cars are hoisted in the 3-compartment shaft a height of 400 ft. to a 30-ton ore bin incorporated in the shaft house structure and thence dropped into 3½-ton trucks for haulage three miles to the mill.

• Above: A view of the open pit and the mining plant of Canadian Industrial Minerals.

• Below: Looking into the open pit at the Canadian Industrial Minerals mine at Walton. Ore is bulldozed into the raise which connects with the 270-ft. level of the mine.



• The hoist which raises loaded cars of ore from the mine level to the ore bin at the surface.

Ore shipped direct from the pit bottom is power shoveled into the 3-ton General Motors trucks which follow a circular ramp to the surface. This practice will presently cease because of the gradually increasing depth and the narrowing of the floor section. It is obvious, too, that a large tonnage of readily available exposed ore is tied up in the roadways, and with the initiation of 100 percent glory hole mining this tonnage can be recovered at the minimum cost.

Looking ahead, the company has driven a second level at the 350-ft. horizon, also connected to the shaft for production purposes but not as yet used. Actually the program is a long-range one, as there is an abundance of ore for years ahead in the developed section of the deposit.

Classic glory hole mining will be reverted to when present roadways and benches are mined. Plans are drawn for the extension of drifts and crosscuts and the driving of raises to develop ore sections with dimensions of hundreds of feet. Mass drilling and blasting can bring down thousands of tons of ore.

Glory hole mining in the Canadian climate has its limitations and all such operations have eventually wound up as conventional underground practice. These include such major developments as International Nickel, Hudson Bay Mining & Smelting, Dome Mines and others.

Extensive diamond drilling from surface and drifting on the two levels established at 270 and 350 ft. have indicated and developed an estimated 2,000,000 tons of high-grade barite ore, sufficient for 20 years' supply of the 300-ton mill. Dimensions of the pit from lip to lip are 700 by 600 ft. but the actual glory hole measures at present 300 ft. in length, 250 ft. in width and 130 feet in depth. The ore body has been delimited in two directions only by surface and underground drilling. It is believed that this is the largest barite ore body of its grade in the world.

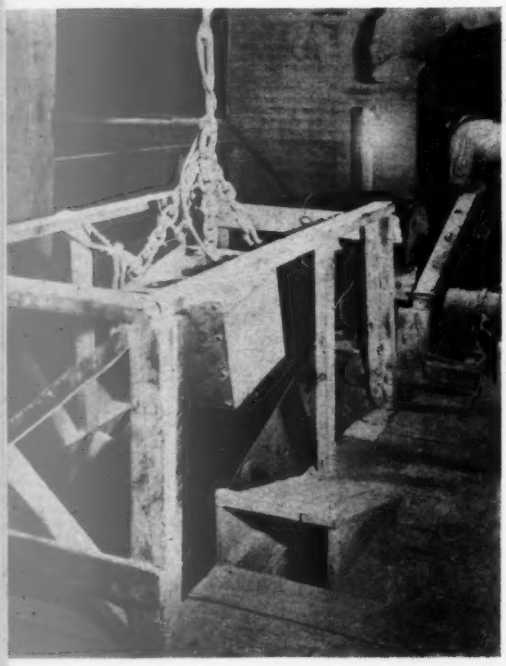
Mining structures include a powerhouse, a water tank, machine and blacksmith shops, a miners' change house, an engineering office, a truck garage and a heating plant. Equipment comprises wagon drills, stopers, ore cars, an electric motor, bulldozers, a hoist, a compressor and electric motors. The head frame was brought from a northern Ontario gold mine 1,500 miles to the west.

At the mill, trucks run up a ramp and dump into a hopper which feeds through a chain gate to a 24- by 50-in. Pennsylvania single-roll crusher, reducing the ore to minus 5 inches. From the crusher the ore passes over two 36-in. belt conveyors to an 80-ton surge bin, connecting with a 24- by 36-in. Jeffrey vibrating pan feeder and on by 36-in. belt conveyor to a Merrick Weightometer; thence to a 4- by 10-ft. Ty-Rock screen, where it is washed. This department has a capacity of 90 t.p.h.

Two products are made by the mill. One is chemical grade crude barite for the paint and filler trade; the other is ground barite for the oil well drilling industry.

After washing and screening, the minus-1½-in. material passes to a 36-in. Akins classifier, while the plus 3-in. ore goes over a picking belt to eliminate waste and low grade. This larger-sized material passes through a 24- by 15-in. Allis-Chalmers jaw crusher and, combined with the product of the classifier, goes to an 18-in. continuous bucket elevator and on to a 4- by 10-ft. Tyler Ty-Rock screen. The ore stream is then taken by an 18-in. belt conveyor over a Link-Belt tripper to a 10,000-ton crude ore bin.

This crude storage bin has 18 gates, serviced by a movable loading hopper which feeds a 24-in. two-speed tunnel belt conveyor on 276-ft. centers, delivering ore to a 24- by 36-in. cantilever grizzly at 1-in. setting and on to a 15- by 9-in. Allis-



• Left: Material on its way from a 3- by 6-ft. screen to surge bins passes beneath a magnet which removes tramp iron.

• Right: The double-deck vibrating screen, where material is washed.

Chalmers jaw crusher. To obtain the ground product the ore passes from the crusher by belt conveyor to a 12- by 15-in. Allis-Chalmers Pulverator and by 12-in. screw conveyor and 20- by 11¾- by 8⅝-in. bucket elevators to bins feeding the two No. 5027 high-side Raymond mills which are equipped with double whizzer separators. The air classification system is heated by an Iron Fireman feed furnace using slack coal. The vacuum maintained in the Raymond mills is around 7½ in. of water. Small adjustments in the whizzer speed give the required fineness.

The Raymond mill product is carried by screw and bucket elevator to two 2,500-ton storage silos, fitted with three 12-in. screw conveyors. The material, after passing over a 3- by 6-ft. Selectro screen and under a Stearns magnet to remove tramp iron, reaches two 40-ton surge bins. Each bin has a roll feeder and a surge hopper which feeds a No. 111 St. Regis packer, taking 112-, 100- and 50-lb. bag sizes. A good operator can fill 20 bags a minute. The bagged material is then passed by 30-in. shuttle belt conveyor to trucks for railway shipment or to the main dock loading conveyor for ship transport as required.

The dock conveyor is 24-in. belting at 620-ft. centers, arranged for two speeds for bag loading of ground and bulk loading of crude. At the dock end two movable conveyors feed two holds at a time and ships are loaded while resting on the harbor bottom.

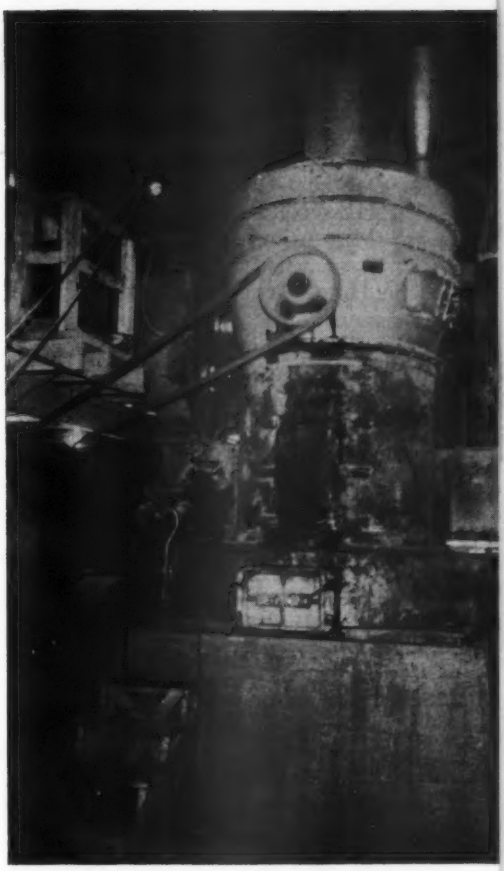
For the crude ore trade, movement starts from the 10,000-ton bin, passes by 24-in. conveyor through a 60-in. Snyder sampler for check essay, thence over a Merrick Weightometer and on by belt conveyor to the ship. Loading can be done at the rate of about 300 t.p.h.

Crude barite must conform to rigid specifications because of its ultimate use in the manufacture of lithopone and other chemical products. Strict control of grade is maintained at the mill by laboratory methods. Minimum content of barium sulphate and maximum content of iron oxide, silicates and strontium are controlled. Oddly enough, the purest ore chemically sells for the lowest price because it is not otherwise treated than sorted, crushed and washed. The crude is processed later by the paint and other industries which market varied products.

There are some quirks in the marketing of ground barites for the oil well industry. A large percentage of this production is sold to Colombia, Venezuela and Trinidad which have a hot, moist climate; and buyers specify that one of the six plys of paper used in bagging must be impregnated with asphalt. Shipments to the Persian Gulf oil fields where the climate is hot but dry must not be packed in asphalted containers for obvious reasons.

At this time the principal customer of Canadian Industrial Minerals Limited is the oil well drilling industry. Well drilling has been expanded greatly all over the world in recent years. The industry uses 500,000 tons of ground barite annually to weight the "mud" in the holes, a device which prevents or re-

(*Continued on page* 91)



• One of the two mills, both of which are equipped with double whizzer separators.

• The operator filling bags at the packer, which takes 112-, 110-, and 50-lb. sizes.

• Here bags are being printed in the bag printing press.

Missouri Limestone Producers Meet At Capital for Second Convention

THE second annual meeting of the Missouri Limestone Producers Assn. was held December 3-4, at the Hotel Governor, Jefferson City, Missouri, with about 130 regular and associate members in attendance.

Highlights of conference sessions were talks by the following: Robert M. Koch, secretary, National Agricultural Limestone Assn., Washington, D. C.; Fred V. Reagel, chief, materials and testing section, Missouri State Highway Dept.; John H. Hendren, of the legal firm, Hendren and Andrae, association attorneys. There was also a panel discussion by men representing five state and federal agencies.

Mr. Koch pointed out that the future of the Federal Farm Program has taken on a brighter color since November 2 as a result of the national election. He gave his reasons for believing agricultural limestone will be used in much larger amounts in 1949 than during the year just ending. His reasons hinged on the defeat of certain congressmen who have opposed the farm program in previous years and the election of others whose past records or public statements show they favor the Federal Farm Program.

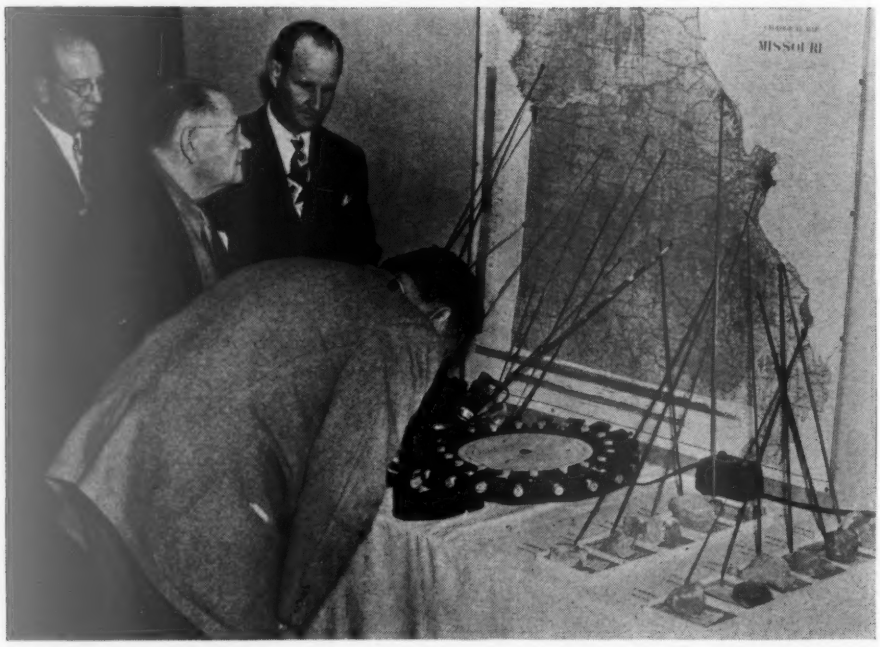
Mr. Reagel described the aggregate problems of the Missouri State Highway Dept., stating that the construction of new highways and roads in Missouri and the maintenance of present installations will require increased amounts of crushed stone aggregates in the next few years. He pointed out why high quality of products and fair prices must prevail throughout the crushing industry. Inferior materials will be ruled out by the highway department, not only because of their resultant inferior effects but also because adequate high-quality stone deposits are available in nearly every area in the state. He stated his firm belief that no producer should set his plant in a location where the quality of the raw material is sub-standard.

• Seated at the speaker's table are (left to right): C. E. Thomson, Dietz Hill Development Co., board member; Mrs. J. W. Cox, secretary of M. L. P. A.; Robert M. Koch, secretary, National Agricultural Limestone Assn., Washington, D. C.; Mrs. L. W. Hayes; B. P. Donnell, Valley Dolomite Corp., St. Louis, retiring board member; Mrs. Paul N. Doll; L. W. Hayes, Kansas City, retiring president of Board of Directors; Paul N. Doll, Jefferson City, manager M. L. P. A.

Mr. Hendren discussed legal aspects of the limestone industry and emphasized the significance of federal wage and hour legislation. He admonished producers to organize their payroll structures to fit those requirements set up by law. Mr. Hendren stated that the turn of the recent national election shows a general trend toward further liberalization of national labor laws and away from legislation curtailing advantages of labor.

The following participated in the panel discussion: Dr. E. L. Clark, Missouri state geologist; J. A. Bergland, head, safety division, Missouri State Highway Patrol; the Hon. Tom R. Douglass, Missouri Commissioner of agriculture; John C. Kendrick, materials division, Missouri Production and Marketing Administration; and John N. Falloon, extension specialist in soils, University of Missouri. Each speaker described the connection of his group with the limestone industry. Questions and answers followed, and producers left the meeting with a sound understanding of their responsibilities to these agencies and the values to be derived therefrom.

One session was a joint discussion between producers and machinery distributors. General agreement was reached by all persons that a code



• Examining the Missouri Geological Survey exhibit are (left to right): R. R. Schaeffer, editor, "Mississippi Valley Contractor", St. Louis; A. W. Harris, St. Louis; J. J. Griesemer, Billings, 1949 president of M. L. P. A.; Paul N. Doll, M. L. P. A. manager.

of ethics was necessary by which producers and machinery firms could cooperate more adequately. It was pointed out that the general goal of both groups was mutual — making adequate amounts of high-quality crushed stone products available at a fair price to customers. According to a general agreement, machinery salesmen should pass along from one producer to another any production ideas which have merit to the trade if the ideas are not trade secrets.

Significant in this joint meeting was the expression that machinery firms should give continued and increased cognizance to the economics of properly locating new plants and of expanding present ones. Emphasis was placed on the fact that no good can result from a badly-located or over-expanded production plant.

About 15 machinery firms, M.L. P.A. associate members, had display space for their publicity materials. The Missouri State Highway Department prepared a comprehensive exhibit showing good and bad crushed stone aggregates which commanded much interest and attention from producers and machinery men.

An exhibit of particular importance to producers was sponsored by the Missouri Geological Survey. This exhibit showed locations of various limestones and dolomites throughout Missouri and their respective desirable and undesirable characteristics.

The association manager, Paul N. Doll, reported that the organization was 21 months old, having been organized on March 1, 1947. Since that time it has grown to a point where its members produce about 70 percent of Missouri's agricultural limestone, and that those members produce only 20 percent of the total inferior P.M.A. material according to official government tests.

Mr. Doll stressed the importance of increased publicity to limestone products, primarily through the mediums of radio, newspapers and periodicals. He stated that publicity should be channeled to two different groups. One type of publicity should be directed to customers; the other to the general public, stressing the values of agricultural limestone to the health and welfare of the people.

Mr. Doll reported further that the association had prepared and sold to its members about 400 newspaper mats, 1300 truck and office decals, 18,000 folders and 160,000 folders of book matches. He stated that 16 members were using association radio scripts on regular limestone radio programs.

Three new board members were elected to fill vacancies created by as many retiring board members. New board members are: Ed Markwell, Auxvasse Stone and Gravel Co., St. Louis; George M. Baker, George M. Baker Co., Lockwood; and Kenneth Kilkenny, Kilkenny Limestone Co., West Plains. Retiring board members are: Oliver L. Taetz, Gray Summit; Ben P. Donnell, Valley Dolomite Corp., St. Louis; and L. H. Bray, Rolla.

Other members of the board of directors who will serve during 1949 are: J. J. Griesemer, Billings; C. E. Thomson, Dietz Hill Development Co., Kansas City; Arthur R. Alvis, Butler; L. W. Hayes, Kansas City; Merl Hamill, Canton; and Ray Howerton, Ashley.

Officers of the board of directors are: J. J. Griesemer, president; C. E. Thomson, vice-president; Arthur R. Alvis, secretary-treasurer; and Paul N. Doll, manager. The legal firm, Hendren and Andrae was retained for another year.

Operation of Power Shovels

(*From page* 79)

and observing the bank and face constantly.

b. Good maintenance.

c. A program to familiarize repairmen with the hazards of the equipment, such as the danger of making repairs when parts are in motion and of handling heavy parts.

d. The use of personal protective equipment, especially safety shoes and goggles by repairmen.

e. Training of operators not to overload, to load properly, to warn workers to keep clear of the shovel, to get on and off carefully, and to follow similar safe practices.

Muddy Farm Lane

(*From page* 81)

veyors and feeders are electrically operated. Other equipment is powered by a 250-hp. Buda engine.

Working with Mr. Fried to learn the business from the ground up is Lewis Fried, his son, who currently is being indoctrinated in the "up" part, in the screen-house atop the bins.

Mr. Fried is secretary-treasurer and general manager of the company. R. B. Levitz is president and Samuel Levitz, vice-president. His key personnel includes Dick Calhoun, sales manager; Faber Walter, foreman, Paul Rhoads, shovel operator, and Bob Arnold, office manager.

Report on Labor Developments

(*From page* 82)

mediation function is a cogent argument. Above all, a conciliator, to be effective, requires the full confidence of all parties. Rightly or wrongly, the conciliators attached to the independent agency have enjoyed the confidence of the business community to a far greater extent than when they were part of the Department of Labor. Another body which has studied the problem feels that the mediation service's independent status should be maintained. This is the Joint Congressional Committee on Labor Management Relations established under the Taft-Hartley Act, sometimes called the "Watchdog" committee. A special report for the Hoover Commission on the reorganization of the government prepared by Dr. George W. Taylor, former Chairman of the National War Labor Board, also finds much merit in an independent service.

Canadian Gold Mining

(*From page* 89)

strains the escape of oil or gas through the column in drilling. Oil well men expected to drill 35,000 holes in 1948, and that could add up to a lot of barite.

The paint and other trades absorb about 300,000 tons at the present time, and this market is also expanding.

Having two products, the company has designed its mill for flexibility. The central storage of 10,000 tons of washed and sized crude is the main reservoir, with 18 outlets and a movable hopper serviced by conveyor belts, so that if the demand is for ground material the flow of ore can be started to the Pulverator and the Raymond mills, on to the bagging machines. If the order is for crude ore, the grinding plant is by-passed by a system of conveyors to the long belt, which carries it directly to the dock for loading into ships. From the dock the portable conveyors discharge the bags to chutes leading to benches in the holds, where they are stored in tiers.

The company is fortunate in the location of its deposit, close to an ocean port and serviced as well by a railway and truck highway. As the main market is overseas or to U. S. eastern seaboard destinations, low transportation costs can be obtained.

George C. Campbell is general superintendent; James Eaton is mine manager and Ralph Smedley is mill superintendent.

the plant operator

by WOLF G. BAUER
Consulting Engineer

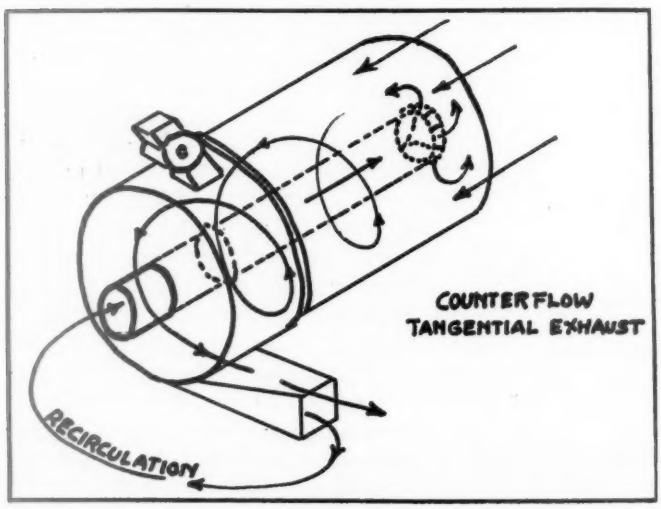
DRYING PROBLEMS IN THE LIME AND ALLIED MINERALS INDUSTRIES
PART VI. ELEMENTS OF GAS MOVEMENT

IN Part III the discussion centered on the movement of various types of solids through dryers of all types. The movement of drying gases in contact with the dryer and the material in the dryer are almost equally important.

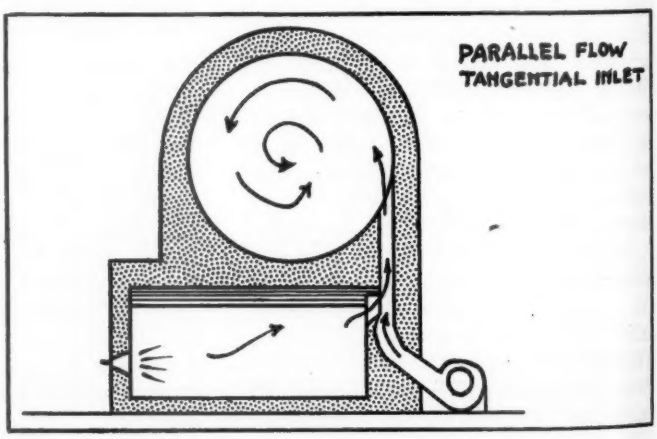
Most solids-drying systems are designed to operate through the means of a gas in motion contacting the moist material. This moving gas performs the dual function of heating and then vaporizing the liquid to be removed, and then sweeping the so-formed vapor out of the system. In direct-heat, conviction-type dryers of various kinds, a mixture of air and the products of combustion constitute the drying gas, while in many indirect heat systems, a stream of material contacting air may perform the function of vapor absorption and removal only. As can be seen by the gas-flow arrows in the illustrations of various dryer systems presented in Part II of this series (PIT & QUARRY, August, 1948, pp. 99-101), numerous combinations of products of combustion gases and air flow are possible.

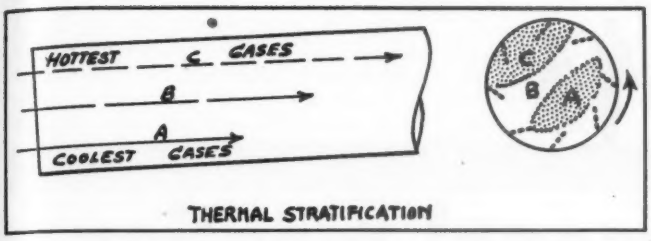
Efficiency Factors The term efficiency is always relative, as it designates a ratio or relation of certain conditions involved or assumed in its computation. Many high-sounding efficiency claims can be made for a drying system, as there are a number of variables that can be set up as ratios to designate an efficiency of one kind or another. One is often tempted to compare drying systems on such ratios as B.t.u.'s required per pound of water evaporated; output or capacity of the dryer per dollar invested; or thermal efficiency expressed as the ratio of theoretical against actual heat requirements. Comparisons based on these ratios or expressions alone may be worthless or misleading. Only if we had a moist material that could be satisfactorily dried by any or all dryer types, would it be of practical value to establish some sort of comparison basis on an overall efficiency. Such a basis would then simply be the overall drying cost per unit of dry material produced.

Two overall efficiencies may be distinguished, and must be integrated for later comparison basis, these groupings coming under mechanical efficiency of the drying and gas-moving elements, and under the thermal efficiencies of the system. Each material exacts a different proportion of fuel, power, labor, upkeep, and control. Any one of these may individually produce a high return for the investment, but often at the expense of the other. To what degree we can reduce the cost of each of these items is a question of correct adaptation of drying principles and design to the peculiarities

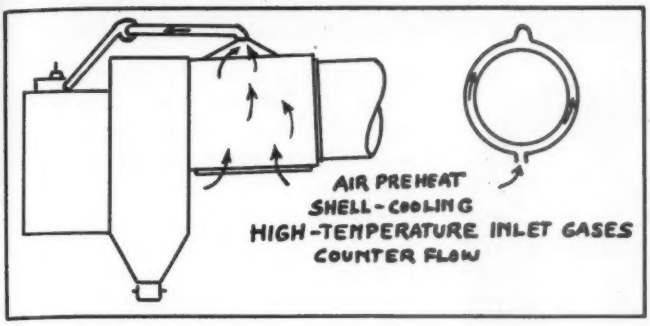


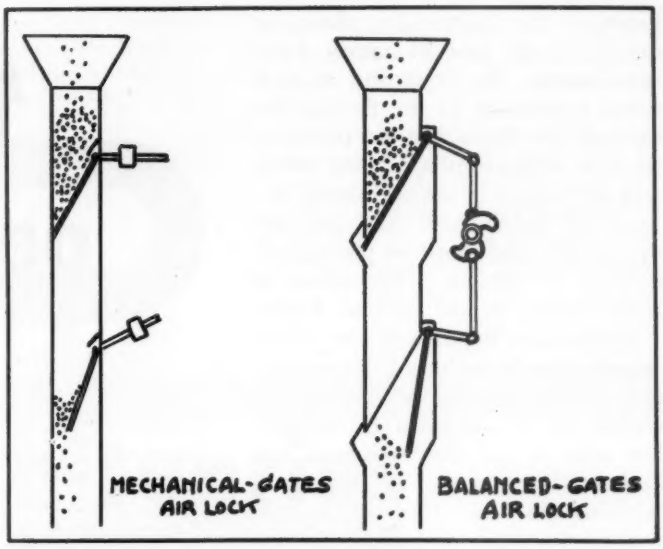
• Left, Fig. 1, showing one technique used in rotary dryer installations.
• Below: Fig. 2, showing application to hot incoming gases.





• Above: Fig. 3 • Below: Fig. 4.





• Fig. 5, showing gas locks.

of the wet material. Thus we may squander power by working with too low a drying gas temperature or too low a relative humidity in exhaust gases, or we may waste radiant heat in those instances where considerable drying must be achieved in the falling-rate period to obtain extremely low moisture-content finished product.

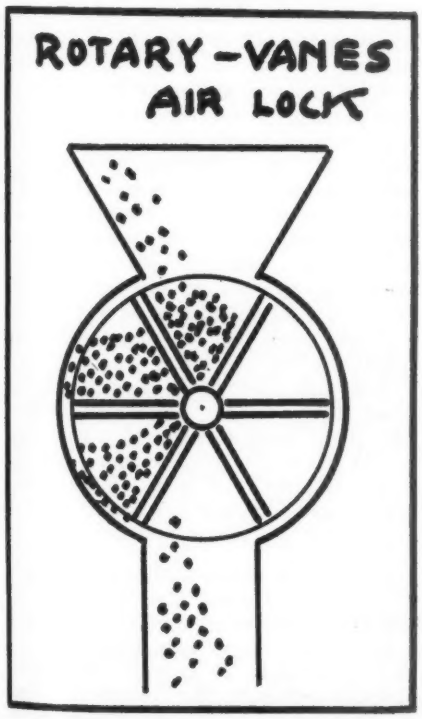
Under the mechanical efficiency of gas flow, efficiency factors are related to friction loss *versus* gas velocities and power requirements, improper duct and fan installations, high leakage load, dust collection requirements, and gas control. Thermal efficiencies are related to insulation, temperature drops of gases, fuel utilization, recirculation, and control.

Power Requirements No equations or laws can be laid down for the power needs of a drying system; the variables are too many and too varied. Through-bed contact dryers of the convection type require more gas-moving power than those in which drying gases are made to pass over or around the moist material. Against this, however, power for mechanical conveying through the dryer, or the movement of the dryer itself, as in rotary shell dryers, may require as much as or more than the fans. Baffle or straight fall tower dryers are probably the least users of mechanical power, but efficiency is usually low from the heating standpoint. This is also the case in some respects with spray-drying, where the high water content offers high thermal efficiency, but also high overall cost when fuel is costly, and water could be removed mechanically for less. Again, in the combination of grinding and drying, the combination of the two processes in one unit has very distinct advantages from a power standpoint, as it generally does not take very much additional gas volume to dry material in a mill which is already arranged for air sweeping and pneumatic transport.

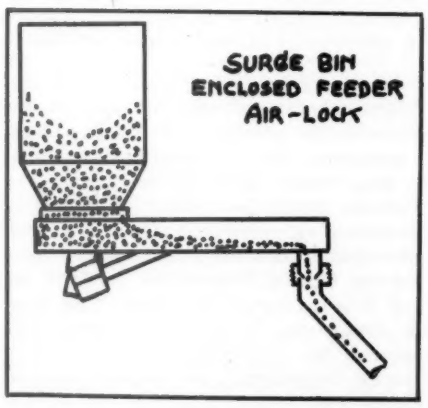
It should be recalled that power varies as the cube of the gas velocity ratio, whereas the evaporating rate of material (water free-surface in the constant rate period at velocities betwen 200-1200 f.p.m.) will vary approximately as the 0.8 power. Into this relationship must be figured the relative cost of electric energy and fuel, in order to arrive at the relative importance of moving more gases at lower temperatures (and increased dust loss or resistance of collectors), as against handling less at higher temperatures and greater heat losses.

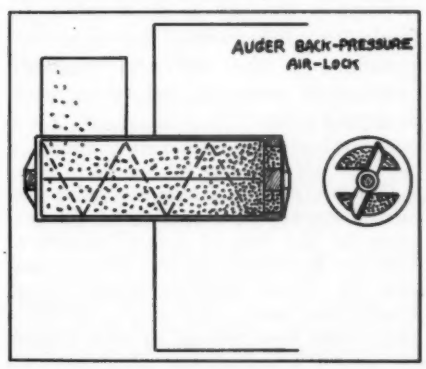
In rotary type dryers, power costs may vary from 10 to 25 percent, while fuel will constitute anywhere from 50 to 90 percent of overall costs.

One of the expedients of increasing drying rate in the constant rate drying period is the increase of gas velocity. Figure 1 shows one of the techniques which may be used to



• Fig. 6, another type of gas lock.





• Figs. 7 (left) and 8 (right), air-tight feeder arrangements.

improve this particular phase of drying in the case of rotary dryer installations. By imparting a rotational movement to the flowing gas through the dryer, the gas retention time as well as its scrubbing effect and turbulency in the peripheral sections of the interior increases the drying rate and moisture pick-up efficiency of the gas. The effect of recirculation, in the case of Figure 1 application, is not only one of increasing the humidity of the exhaust gas, or the velocity increase in this section due to increased gas volume, but also to aid the action of the tangential gas outlet in creating a whirling gas flow. It should be apparent that this technique is best applied in the cold, wet-feed end of a counterflow dryer, as here the dusting is at the minimum, and convection effect is exploited at an optimum rate.

Figure 2 illustrates how this method can be applied to hot incoming gases. This should also be applied at the wet end of the dryer; hence it is best used in a parallel-flow unit at the fed end. The efficiency of this technique will be further discussed in a future issue of PIT & QUARRY in connection with another development.

Figure 3 shows diagramatically how gases will stratify due to density and poor mixing. By using lifters having grates or perforations of considerable size, it is possible sometimes to hold the fine and more dusty dry material in the lower portion and to elevate only the coarsest lumps to the top into the hotter zone, where gas current would otherwise blow the smaller sizes back again into the dryer.

Figure 4 indicates how high heat losses may be offset by recuperation for burning in instances where high inlet temperatures must be used for low moisture product.

Figures 5 and 6 are illustrations of gas locks to hold gas and air leakages to the minimum.

Figures 7 and 8 show air-tight feeder arrangements, the type depending on the size and moisture content of material fed to or from a drying unit.

Officials of the Universal Atlas Cement Company have announced the purchase by the firm of several parcels of land in Botetourt County, near Roanoke, Va. These lands at Mount Union, which have been under option for some time, have been proven by core drilling to contain limestone and other materials suitable for cement manufacturing.

personal mention

Carl B. Olson, vice-president of Permanente Cement Company, Standard Gypsum Company of California, and Henry J. Kaiser Company, recently announced the following operational management changes, effective January 1, 1949:

W. A. Marsh

WALLACE A. MARSH, formerly assistant to Mr. Olson in general managership of Permanente Cement, will become general manager of the company and its subsidiaries.

C. E. Harper

R. S. Barneyback

CLAUDE E. HARPER, assistant general manager of Standard Gypsum, becomes general manager in charge of all activities of that company.

R. S. BARNEYBACK, another Kaiser veteran, and most recently assistant general manager of the Henry J. Kaiser Company, has been advanced to general managership of that company's Sand and Gravel Division.

Headquarters of each of the companies remains in the Kaiser Building, Oakland, Calif., with no other changes in directors or officers of the companies.

Effective January 1, 1949, A. R. (JEFF) WILSON became district manager of the Sacramento territory for Pacific Coast Aggregates, Inc., of San Francisco.

Mr. Wilson spent 25 years with the Granite Rock Co., Watsonville, Calif., becoming vice-president of this firm and president of its ready-mixed-concrete subsidiary, Central Supply Co. In 1948 he left P.C.A. to head the Pacific Pipe Line & Engineers, Ltd., Los Angeles. He severed his connection with the last-named organization to assume his new duties with P.C.A.

Mr. Wilson is a native of Watsonville, Calif., attended the University of California at Berkeley, and received his Bachelor of Science Degree in Engineering at Massachusetts Institute of Technology.

The appointment of HENRY B. BURKS to succed R. H. MACFETRIDGE as plant manager of the Lehigh Portland Cement Company plant at Birmingham, Ala., has been announced by Roy N. Young, vice-president and operating manager. Mr. MacFetridge retired as of December 31, after 44 years of service with Lehigh.

Mr. MacFetridge was first employed by the Lehigh Portland Cement Company in 1904. After a short time he went to Mitchell, Ind., to help build Lehigh's No. 2 plant, after which he was put on the construction of the No. 2 plant at New Castle, Pa., and the plant at Belleville, Ontario. His next assignment was superintendent of quarries at Mitchell, from which he advanced to superintendent of plants 1 and 2 at New Castle, Pa. From this position he went to the Fordwick, Va., plant as superintendent. He returned to New Castle as superintendent in 1918, but went to Birmingham in 1922 to take charge of constructing the new Lehigh plant there. When that plant was put in operation, he became superintendent, a title which has been changed in recent years to plant manager.

Mr. Burks is well grounded for his new position, having been assistant plant manager and supervising chemist of this plant. He was employed at the Birmingham plant as plant engineer in 1937 after 2 years with the Scripto Manufacturing Company. He served in the U. S. Army from 1941 to 1946, after which he returned to his former position at the Birmingham plant and shortly received promotion to the position of assistant plant manager.

JAMES A. TROTT has been appointed chief chemist of the Birmingham plant. Mr. Trott studied chemical engineering at the University of Alabama. He has been employed at the Birmingham plant since 1923, and was assistant chemist prior to his recent promotion.

GORDON H. CHAMBERS, vice-president of the Foote Mineral Company, is touring the Scandinavian countries and western Europe to contact manufacturers and processors of lithium and other specialty minerals. Mr. Chambers joined the staff of Foote Mineral Company in 1928.

JOHN YOUNG, director of employee relations for the Lehigh Portland Cement Co. at Allentown, Pa., has been elected to the board of governors of the Allentown Chamber of Commerce, succeeding Raymond H. Bright of the same company.

ERNEST A. HEKKING has been named to head a newly-created sales promotion and correspondence department for the National Gypsum Co., while his former duties as manager of paint sales will be assumed by C. GUSTAVUS, manager of gypsum wallboard sales.

JOE L. PHILLIPS, of the insulation sales department, has been designated to handle rock wool sales. Named to assist him was DAVID N. SCOTT, formerly head of the sales correspondence department.

J. G. WEST has been appointed vice-president and manager of the Lone Star Cement Corporation's Indiana Division, succeeding GEORGE E. PIERSON. Mr. West assumed his new duties on December 1, 1948.

Mr. Pierson will remain with the corporation in an advisory capacity.

RALPH H. NOLAN, former head of the Nolan Stone Company, Prospect, N. Y., has become executive vice-president and treasurer of the Credle Equipment Company, Utica, N. Y., according to announcement by William D. Sturgeon, vice president.

The company is distributor for heavy contractor equipment and municipal public service equipment. Mr. Nolan recently sold the so-called "Prospect" quarry to the Eastern Rock Products Company.

JAMES H. ACKERMAN, president of the Lawrence Portland Cement Company, has been appointed one of the 46 advisory council members of a special Senate committee (Senator Capehart's group) to investigate the effects of last summer's much discussed Supreme Court decision, which declared the basing point price system illegal.

ROBERT J. POTTS has been appointed by Governor Beauford Jester of Texas as a member of the Texas State Highway Commission, to take office on February 15, 1949.

Mr. Potts is now residing at Harlingen, Tex., having disposed of his interests in the Potts-Moore Gravel Company of Waco. He was president of National Sand and Gravel Assn. in 1930-31 and continued to take a very active part in the work of the association until his retirement from business.

MISS MARIE J. GABELIC, a member of the firm of Rowe, Gabelic and Buehler, Pasadena, Calif., has resigned from her office as secretary of the firm. She will remain with the company, but will expand her mining activities in San Bernardino County. MISS DOROTHY PONDER will succeed Miss Gabelic as secretary.

Retirement date of WILFRED SYKES, president of the Inland Steel Company, producers of fluorite, has been extended from December 31, 1948, to April 27, 1949, by action of the company's board of directors.

At the same time the directors also made the following changes: CLARENCE B. RANDALL, formerly vice-president in charge of materials for Inland Steel (and president of the firm's subsidiary, Inland Lime and Stone Co.), has been made assistant to the president. Mr. Randall has been with Inland since 1925.

P. D. BLOCK JR., formerly assistant vice-president (and vice-president of Inland Lime and Stone Co.), is now vice-president in charge of raw materials.

obituaries

COLONEL W. P. WATSON, 59, president and general manager of the Hamilton Gravel Company, Hamilton, O., died on December 20, 1948, at his home in that city.

Colonel Watson founded the company in 1921 upon his return from World War I and was actively engaged in the management of the business until the time of his death, except for the 3½ years he spent in the armed forces during World War II. He was a graduate civil engineer of Oklahoma Agricultural and Mechanical College and Massachusetts Institute of Technology. David W. Watson, son of Colonel Watson, secretary-treasurer of the company, will succeed him as general manager.

JOSHUA A. CREW, retired vice-president of the Ayers Mineral Co., Zanesville, O., died of pneumonia on December 31, 1948, at the age of 60 years.

A graduate of the Ohio State University School of Mining and Metallurgy, he became chief metallurgist at the Illinois Steel Company, Gary, Ind. Later he took a similar position with the Pittsburgh Steel Company, Monssen, Pa. In 1922 he became associated with the Ayers Mineral Co., and in 1943 became vice-president in charge of operations of the firm's Glass Rock, Millwood, and Blissfield (O.) and Lexington (Tenn.) plants. He retired from his duties in June, 1948, because of ill health.

MYRL L. JACOBS, vice-president in charge of raw material properties of the Bethlehem Steel Company, died on November 13 at Trinidad, British West Indies. He became ill on the previous day at the company's Palua mine.

Mr. Jacobs was appointed general manager of quarries for Bethlehem Steel in 1920 after having served as engineer with several other companies in previous years. In 1934 he became general manager of the stone and slag division for Bethlehem, and five years later he was made assistant to the vice-president. Since 1940 he had been a vice-president of the steel concern and its various mining subsidiaries and a director of the parent company.

HORATIO F. CURTIS, retired president of the Lyman-Richey Sand & Gravel Corporation, Omaha, Neb., died recently at an Omaha hospital. Mr. Curtis was 84 years of age.

JAMES O. NEIL, 37, formerly a chemist at the Monolith Portland Midwest Cement Co., Laramie, Wyo., died recently at Rawlins, Wyo.

OLE OLSEN, proprietor of the Olsen Quarries at Weeping Water, Neb., died recently at Lincoln, Neb., after an illness of several months. He had been engaged in the quarry business for about 60 years.

JOHN L. STEELE, a member of the board of directors of The Warner Company, died unexpectedly at his home in Forest Hills, Long Island, on August 26. Mr. Steele had been a member of the Warner board of directors since 1930. He was a former vice-president of William Steele & Sons Company, contractors and builders.

DR. ABNER O. ALBIN, surgeon to the Blair Limestone Company and the Pittsburgh Limestone Company at Charlestown, W. Va., died at his home on November 15 at the age of 72 years.

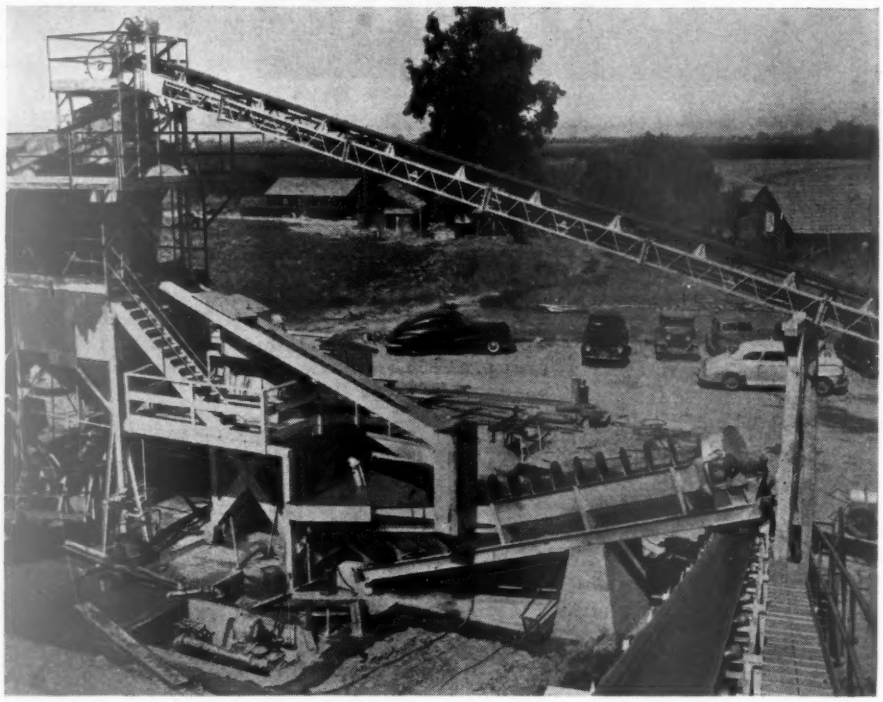
MICHAEL J. ROBERTS, 87, retired Slatington, Pa., slate quarry operator, died on December 15, 1948. With his brother, Hugh, he established the firm of Roberts Bros., which operated slate quarries at Trout Creek, Eureka, and Berlinsville. He retired in 1942.

T. M. PORTERFIELD, 71, president of the Columbus Gravel Company, Columbus, Miss., died recently in a local hospital after a brief illness. He was also vice-president of the C. G. Kershaw Contracting Company.

A. J. HENKEY, engineer for Arnold & Weigel, Inc., Woodville, O., died on December 31, 1948, at the home of his brother, Max Henkey, at Seal Beach, Calif., after an illness of about one year. He was 55 years of age.

new machinery and supplies

PIT AND QUARRY



● Sand Preparation Machine

The "Wemco" sand preparation machine employs the principle of difference in specific gravities of particles to separate sand from undesirable fines.

Sand pulp entering the separation pool sinks to the bottom and is carried by the spiral conveyor to the upper end of the machine, where it is discharged dry and clean. Clays and undesirable fines are passed over the overflow weir and carried to waste, since they are light and do not settle as rapidly as sand.

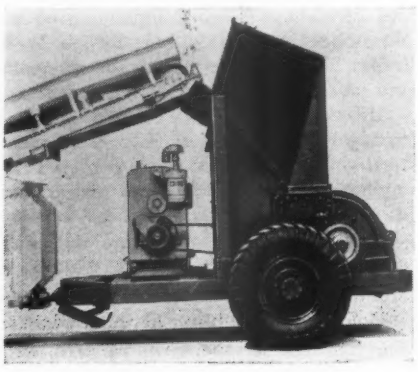
Special features of this machine include the following: spiral conveyors of advanced pitch with cast steel arms, preformed steel flights and long-wearing flight shoes; a hydraulically operated lifting device to remove conveyor from tank in case of power failure; a reinforced tank made of electric welded steel plate with self-supporting substructure; upper and lower bearings of sealed, antifriction type; gear drive with efficient, trouble-free cast steel gears.

This machine comes in sizes 24-in. through 78-in. diameters, which have sand rating capacities from 11 to 364 cu. yds. per hour. Manufactured by the Western Machinery Co., San Francisco, Calif.

● Portable Crusher

A new portable crushing unit has been introduced by Athey Products Corporation, Chicago, for use with the Athey force-feed loader.

Designed primarily to tow behind an Athey force-feed loader, the new crusher provides a fast and inexpensive means of reclaiming highway pavements. Surfacing materials, black top, concrete and gravel can be reworked on the site, eliminating the necessity for transporting to and from a central crushing plant. The one-man operated unit picks up scarified or broken material from the road, crushes it to any required size and deposits it back on the roadway in one continuous operation.



The unit consists of an impact mill powered by a "Caterpillar" diesel engine, mounted on a two-wheel, rubber-tired trailer. A multiple V-belt drive connects the engine with the mill.

The crusher hopper is fitted with breaker bars which pulverize material and deflect it onto a grid iron, preventing the fines from entering the mill. The trailer is equipped with 13.00 x 24.00 tires, hydraulic brakes that are synchronized and operated from the force-feed loader brake pedal. It is fitted with a spring-cushioned, automatic-type hitch coupling, providing adequate and essential safety features for matched force-feed loader and crusher unit performance.

The trailer is also equipped with a hydraulic jack and has an all-welded, box-section chassis. Shipping weight is approximately 14,000 lbs.

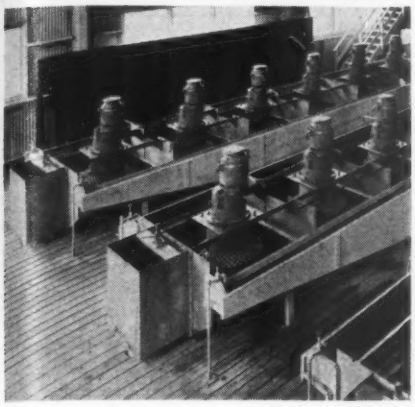
● New Belts

Raybestos-Manhattan,. Inc., Manhattan Rubber Division, Passaic, N. J., has announced a new conveyor belt with rayon cord plies as a strength member. The belt is designed to meet the needs of mechanized mines, quarries and limestone plants for a belt of higher tensile strength for increasing heavy-duty, long-lift conditions. Because of extensive mechanization in mines and quarries in recent years, the trend has been toward longer belts, higher lifts and heavier loads. Advantages claimed for this new belt are: troughs easily; has fiber resilience; can utilize conventional type idlers and pulleys; can be field-spliced with conventional methods; and permits construction modifications to suit varying service conditions.

The addition of the newly developed Ray-Man V-Belt to the company's line of industrial rubber products has also been announced. The new Ray-Man V-Belt was developed by Manhattan's engineers to meet the need for a belt possessing features particularly applicable to rugged drives.

● Flotation Machine

The basic design feature of the Fagergren flotation machine is a rotor-stator element which provides intense mechan-



ical aeration and agitation of the pulp. This element is claimed to be exclusive with the Fagergren. It is designed to give high extraction ratios and result in low operating costs in the treatment of nonmetallic and metallic minerals. Treatment times are reportedly reduced because the rotor-stator design results in the production of a great quantity of very fine bubbles concentrated in the bubble-column zone.

Fagergren flotation machines are equipped with V-belt drives to provide the proper rotor speed for individual requirements. These machines are available as 1-, 2-, 3-, or 4-cell units in level cell design. Fagergrens come in sizes 28, 36, 44, 56 and 66-in., single or multiple units. Manufactured by the Western Machinery Company, San Francisco, Calif.

● Dual-Fuel Engine

A new 2-cycle, 21½-in by 27½-in. dual-fuel diesel engine, with fast, easy changeover from gas to oil and oil to gas, and engine rating of 425 horsepower per cylinder in sizes of 5 to 10 cylinders, has been introduced by Lima-Hamilton Corp., N. Y.

The dual-fuel engine is designed for operation on low-pressure gas with extremely low pilot fuel requirements, and is described as the first large, two-cycle, loop-scavenging engine to work satisfactorily on the low-pressure gas-injection principle. Pilot fuel requirement rates as low as 8 1/3 lbs. per hour per cylinder, according to Lima-Hamilton, have been observed under test at 90 percent load.

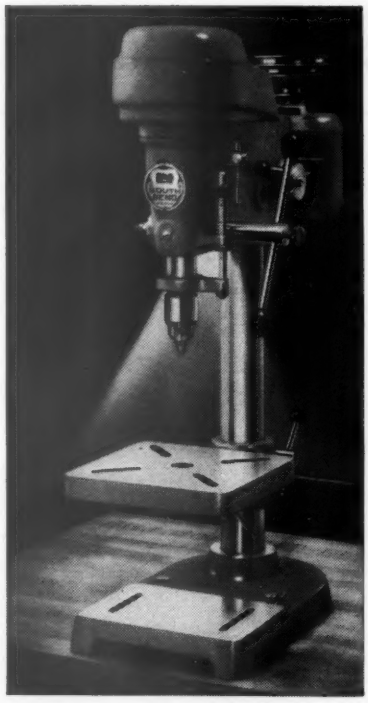
When arranged for dual-fuel operation, the engine rating of 425 hp. per cylinder is at 240 r.p.m., whether running on gas or oil. This is a net rating at 100 percent load, the company reported, and includes blower requirements. In performance, maintenance and control, no perceptible difference can be found between dual-fuel and straight diesel operation.

Control of air temperatures to the engine is maintained by means of a cooler located between the scavenging blower and the engine. The cooler is of sufficient capacity to provide a constant air temperature under the most extreme ambient conditions.

Gas injection, in very closely metered quantities, starts as the exhaust ports are closing, thus compressing the gas with the entrapped air. The gas pressure in the main gas manifold in direct proportion to the engine load and the amount of scavenging air is varied according to load.

● Precision Drill Press

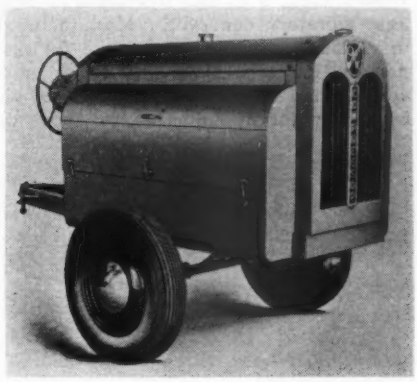
A new 14 in. precision drill press has been announced by the South Bend Lathe Works, 156 East Madison St., South Bend, Ind. Both bench and floor models are now in production. Most specifica-



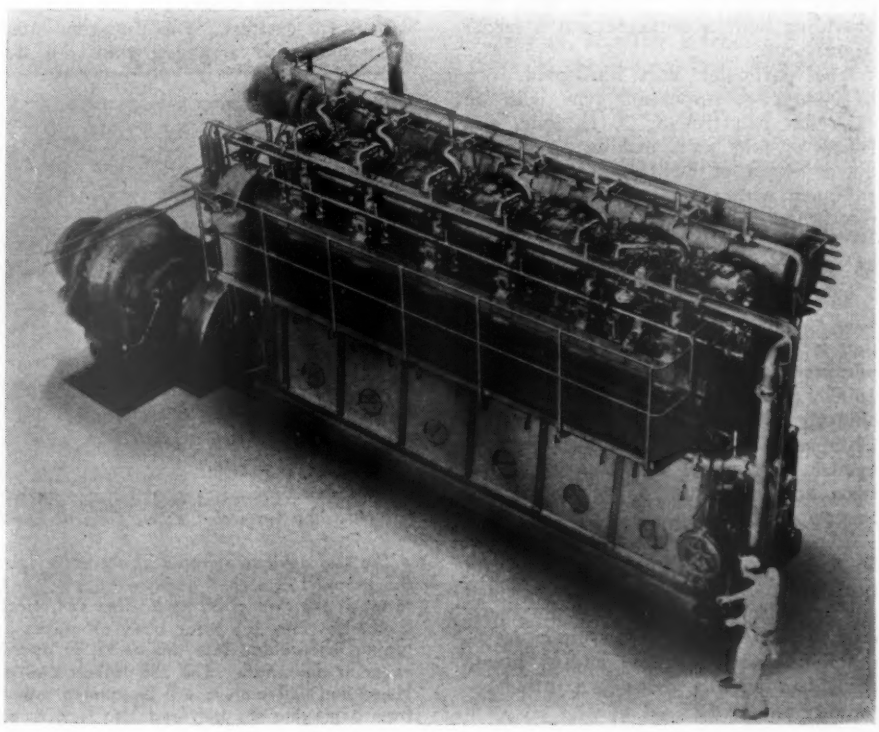
tions are common to both models, each having a capacity to drill ½-in. iron or steel at the center of a 14-in. circle.

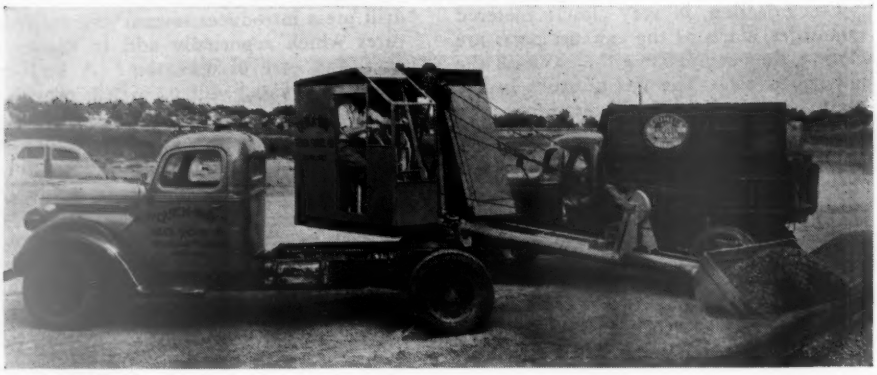
Being a completely new design, this drill press introduces several original features which reportedly add to convenience and ease of operation. A built-in light with independent switch provides shielded illumination for the work area, eliminating the necessity of installing a separate lighting fixture. A quick-acting belt tension release lever simplifies changing the spindle speeds and returns the vertical-mounted motor to its original position after each change, thus maintaining the same belt tension for each of the four cone pulley steps.

The spindle has a maximum travel of 4 inches, with spindle speeds of 707, 1305, 2345 and 4322 r.p.m. The free-floating spindle design prevents misalignment, side thrust and whip. The depth gauge is graduated in sixteenths of an inch, and has adjustable collars to control both the depth of feed and the length of the return stroke.



The new "OK" SS60 compressor, manufactured by the O. K. Clutch and Machinery Co., Columbia, Pa., weighs 950 lbs. with skid mounting and 1100 lbs. with trailer mounting. It can deliver 60 cu. ft. of free air and can be towed or carted to the job. Ford motor and standard automotive parts simplifies maintenance and replacements. Air tank capacity is 4 cu. ft., and the air receiver is extra large.

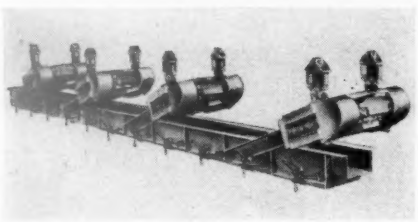




• A "Quick-Way" scoop loading gravel into a waiting truck. The full revolving cable crowd permits maximum use without moving the truck. Various sizes of buckets can be provided for different types of aggregates. Manufactured by the Quick-Way Truck Shovel Co., Denver, Colo.

• Vibratory Conveyor

The Syntron Company, 375 Carson, Homer City, Pa., has developed a new long vibratory conveyor. Manufactured in various lengths and capacities for suspension or base mounting, these units are powered by one or more Syntron vibratory motors mounted either above or



below the trough, depending upon the available room. This type of conveyor is said to be particularly advantageous in the handling of extremely hot abrasive materials.

There are no belts, idlers or variable speed motors to maintain — the movement of the trough is confined entirely to the spring system of the vibratory motor — and a dial switch provides variable control of the rate of material flow, thus providing both a conveyor and a feeder in one unit.

The particular unit illustrated is a heavy-tonnage suspension type with an open flat pan trough, 20 ft. long, and is one of four units making up a combined length of 80 ft. The trough is equipped with gates located above each retort, for charging as desired.

• Alternators

The Kato Engineering Company, Mankato, Minn., has recently added to its line a new series of alternators which permits a top capacity of 300 kw. at 1800 r.p.m., 60 cycles. The new machine is available at speeds of 720, 900, 1200 and 1800 r.p.m., with direct-connected exciter on the high-speed designs and top-mounted exciters on the lower speeds.

The rotor is mounted on 3617 and 3620 size Norma-Hoffmann cartridge-type bearings. These bearings are sealed with sufficient grease for their life; however, a grease groove in the outer rise of the ball bearing permits adding grease through a suitable grease gun fitting externally mounted.

All rotors are constructed with dampner windings to facilitate parallel operation. They are carefully banded with a steel wire to protect rotor field windings

from centrifugal force damage due to moderate over speed.

All Katolight alternators are available with Kato exciters. The direct-mounted exciters are so arranged that the exciter armature may be removed without dismantling the alternator. The top-mounted exciters are arranged so that V-belt may be kept at proper tension because of an easily adjustable exciter base.

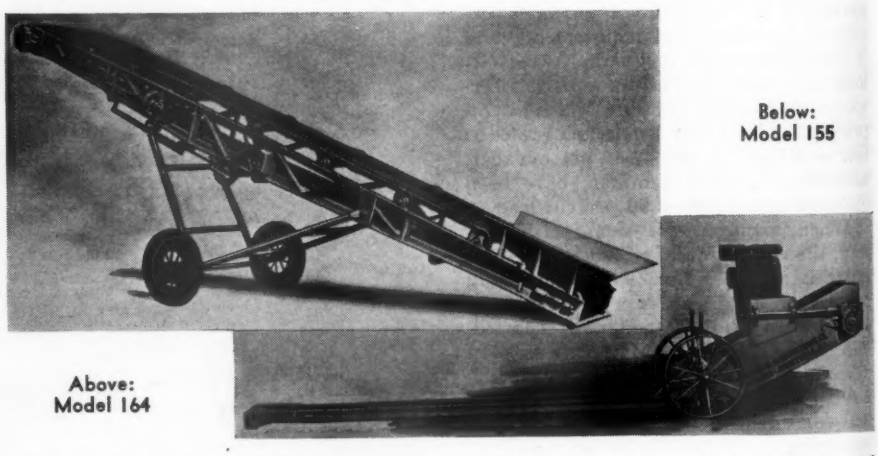
• Rectangular Electromagnet

The "Deep Burden" suspended rectangular electromagnet recently developed by Dings Magnetic Separator Company, 4740 W. McGeogh Ave., Milwaukee, Wis., claimed to be the strongest magnet known in the world, offers a means of tramp iron extraction never before available.

The magnet was developed specifically for a large Southern coal mining company to remove tramp iron from coal on a belt 2449 ft. long and 42 in. wide, delivering 1000 tons of coal per hour. The depth and nature of the burden prevented placing the magnet closer than 18 inches from the belt. The problem was solved by designing a triple-pole rectangular magnet with an extra amount of coil windings to give the magnetic power and penetration necessary for that distance. Laboratory tests showed the intensity of the magnet field to be 200 gauss at 24 inches from the surface.

In order to dissipate the heat generated within the magnet, ribs were placed on the sides, and aluminum extensions were run internally from coil to case to assist in conduction of the heat.

The Deep Burden rectangular magnet can be installed suspended over conveyor belts, spouts, or chutes, and is designed for any application where heavy burdens or exceptionally fast belt speeds make it impossible for standard magnetic separators to do an effective iron-removal job. Possible uses of the deep burden magnet, include protection of crushers, grinders, pulverizers, stokers and other machinery, prevention of fires and explosions caused by tramp iron sparks in dust laden atmospheres, and removal of contaminating iron from such products as coal, rock, slag, non-magnetic ores, etc.



Below:
Model 155

Above:
Model 164

The two devices pictured above—the Baughman Model 164 open trough belt conveyor and the Model 155 arched delivery hopper car unloader—comprise a team which reportedly performs at the rate of 60 t.p.h. The 164, electric- or gas-driven, loads or unloads materials and discharges into any truck body or makes a pile. The hoisting mechanism is of heavy pipe tubing, arc-welded into one unit. It operates with scissor-type action, supporting the conveyor at any angle. The 155 (electric or gas) takes material from the full width of the car. Head and tail pulleys are Baughman non-clogging spider type to prevent foreign material from damaging the belt and also to give positive traction.

trade notes

H. D. Foster

H. D. "Judge" Foster, manager of the Mechanical Goods Division of the Goodyear Tire & Rubber Company, was presented with a service pin recently in recognition of his 35 years of continuous service with the company.

Mr. Foster was named to his present post in June, 1947, succeeding the late W. C. Winings. He started with the company as a general office employee and the following year entered the mechanical goods sales department, assigned to the Cleveland and Toledo district.

In 1915, he was made district manager at Birmingham, Ala., and two years later he became manager of the Cleveland district, a position he held for 24 years until his appointment in 1941 as Eastern division manager of mechanical goods sales.

Marion Power Shovel Company of Marion, O., is announcing the appointment of Stanley R. Shepard as district manager of its newly-arranged upper New York state district with headquarters in Albany.

Mr. Shepard is maintaining his headquarters at 225 Hansen Avenue in Albany. He assumes his new position after a month's stay at the Marion general offices and factory in Marion, O.

H. H. Buchanan

Lima Shovel and Crane Division of Lima-Hamilton Corporation announces the appointment of Buchanan Company of Kansas City, Mo., as sales agent for Lima shovels, cranes and draglines in Oklahoma, Kansas and western Missouri. The Buchanan Company's business office is located at 1710 Grand Avenue, Kansas City 8, Mo. Space in this building has been allotted for servicing equipment and for storage of parts.

Hugh H. Buchanan, principal of the company, has been associated with the construction equipment industry for 25 years. Until recently he was director of foreign operations for Lima Shovel and Crane Division, Lima-Hamilton Corporation, and Michigan Power Shovel Company, Benton Harbor, Mich. He left his former position with the above companies to form his own company.

Edward B. Yancey, a vice-president and member of the board of directors and of the executive committee of E. I. du Pont de Nemours and Company, who for many years has been a leading figure in the explosives industry, recently died of a heart attack.

Mr. Yancey joined Du Pont as a chemist at the Repauno, N. J., Works, in September, 1908, and served, successively, in many important positions. He was elected to the board of directors in 1938 and became a vice-president and member of the executive committee in 1944.

Gar Wood Industries, Inc., announces the promotion of R. D. Hiller Jr. to South Central regional manager, with headquarters at Tulsa, Okla. Mr. Hiller's region consists of Nebraska, Kansas, Missouri, Oklahoma, Arkansas, most of Texas, Louisiana, Mississippi, and parts of Tennessee, Kentucky and Illinois.

Cummins Engine Company, Inc., Columbus, Ind., has issued a service and parts map of the United States showing all cities in which Cummins service is available. Addresses of factory regional offices are also listed.

About 25 students, including several foreign visitors, enrolled in the Worthington Pump and Machinery Corporation's six-month training course at Harrison, N. J. Officials of the company stated that the training program had been planned because of a realization for the need of an interchange of technical ideas between the United States and foreign countries.

Students will spend three months at Harrison for training in the operation of pumping equipment, condensers, and related machinery. They will then go to the Buffalo works for instruction in diesel and gas engines, compressors, and power transmission equipment. The last month will be spent at Wellsville, N. Y., and Holyoke, Mass., for the study of steam turbines, portable compressors, rock drill equipment and related components.

Link-Belt Speeder Corporation announces the appointment of Robert B. Barnes as sales manager. He succeeds Hayes Parsons, who has retired due to illness.

For the past four years, Mr. Barnes has been assistant sales manager of Link-Belt Speeder Corporation. Previously, he had been a district representative in the Southeastern territory. His headquarters will be at the general office and Link-Belt manufacturing plant at Cedar Rapids.

T. J. Lingle

Taylor Forge & Pipe Works, Chicago, announces the appointment of Thomas J. Lingle as Western Division Manager in charge of manufacturing operations at its new Fontan, Calif., plant. He also will direct West Coast sales.

Mr. Lingle formerly was associated with C. F. Braun Company of Alhambra, Calif., engineers, manufacturers and constructors of oil refineries and chemical plants, and since 1946 has operated his own valve and fittings business in Alhambra.

Appointment of A. J. Belanger as bituminous equipment sales engineer for Pioneer Engineering Works, Minneapolis, Minn., has been announced by K. E. Brunsdale, sales manager. Mr. Belanger will serve as a specialist on sales in the United States and Canada.

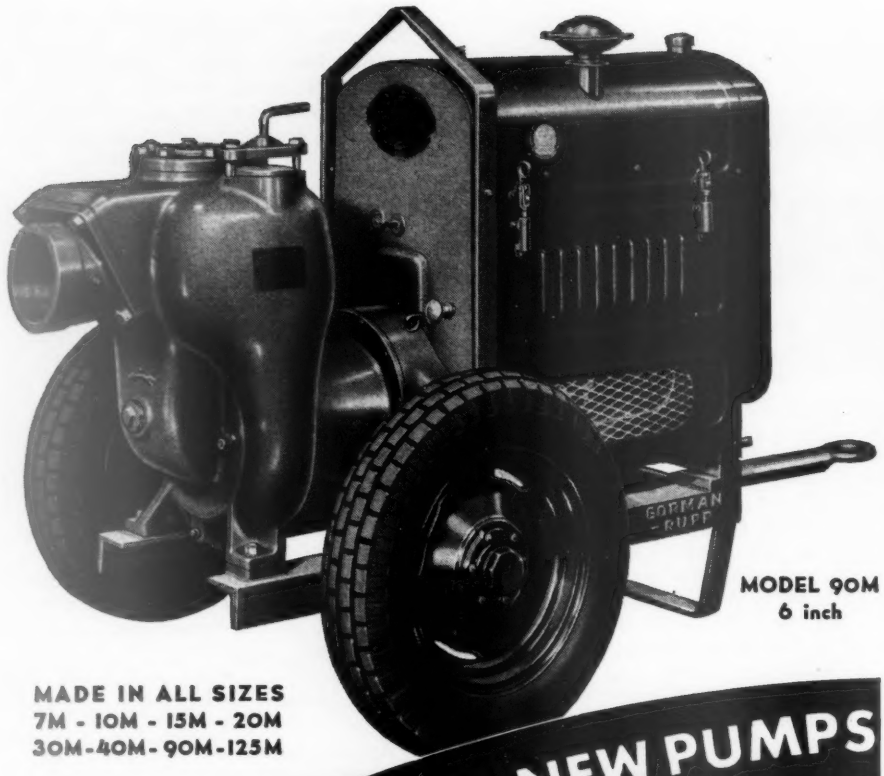
The Anaconda Copper Mining Company announces the appointment of C. B. Peck Jr. as Assistant Manager of Industrial Sales.

Mr. Peck will act as liaison between mills, headquarters, district offices and customers. He will also continue to carry on his function as Manager of Portable Cable Sales.

The Western Machinery Company of San Francisco has established full sales and engineering service facilities for the Fagergren flotation machine, latest addition to the Wemco line. Western Machinery has acquired exclusive manufacturing and sales rights for Fagergren cells, which were previously handled by the American Cyanamid Company.

John F. Flippo, assistant manager of the Atlas Powder Company's Pittsburgh District sales office, has been transferred to Chicago as assistant manager of the Chicago District sales office. J. L. Wetzel, sales representative in the Pittsburgh District, succeeds Mr. Flippo as assistant manager.

The Chain Belt Company of Milwaukee announces the appointment of the Capital Machine & Welding Works of Sacramento, Calif., as a distributor of Baldwin-Rex roller chains. A complete stock of Baldwin-Rex roller chains, Baldwin-Rex flexible couplings and Baldwin-Rex sprockets will be available at this company. Rex Chain and Transmission and Conveyor and Process Division products are also handled by Capital.



MODEL 90M
6 inch

MADE IN ALL SIZES
7M - 10M - 15M - 20M
30M-40M-90M-125M

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CHALLENGE ANY PUMP TO MATCH THEIR PERFORMANCE

With a new complete line of Contractors' Pumps, Gorman-Rupp has topped their own past high record of performance with a better pump --

-- QUICKEST PRIMING

-- HIGHEST PRIMING

-- PUMPS MORE DIRTY WATER

Compare them for priming speed:

The new Model 15M (3") primes at 25 ft. suction lift in 61 seconds.

The new Model 90M (6") primes at 25 ft. suction lift in 44 seconds.

And the Gorman-Rupp is still the most simple pump --

No ports, no valves, no clean-out plates, nothing to cause stoppages.

Write for the new Contractor's Bulletin 8-CP-11

THE GORMAN-RUPP
Guarantee

Our distributor's are authorized to put a Gorman-Rupp Contractor's Pump on any pumping job, anytime, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water, more hours, using less gasoline, to prime quicker and at higher suction lifts than any other self-priming pump. If it isn't the best all around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

The Crocker-Wheeler Electric Manufacturing Company, a division of the Joshua Hendy Corporation, Ampere, N. J., has reopened its Buffalo branch office in the Ellicott Square Building, Buffalo, N. Y. The new branch, operating directly under the New York district manager, is headed by Louis E. Rau, who comes to Buffalo after several years on the staff of the New York District Office.

D. A. Pollock

David A. Pollock has been appointed to the sales-engineering staff of Easton Car & Construction Company, Easton, Pa. Mr. Pollock has been associated with the Canadian Car & Foundry Co., Ltd., in Montreal, Quebec, for the last ten years.

Mr. Pollock's headquarters will be at the home office at Easton, Pa. He will remain active in the Canadian mining and quarrying fields, and in the Great Lakes region in this country.

The following appointments have been announced by officials of the Hyster Company:

Paul Brainard, formerly assistant supervisor of hoist design, has been named head of the newly-created Hyster engineering standards department.

William Morrow, who was purchasing agent at Danville, Ill., has been made chief accountant for the Portland, Ore., office.

R. E. Stiegele, former district representative for Hyster, has been transferred to the general sales department in Portland, Ore., to handle special sales assignments for Philip Hill, general sales manager. He will be replaced in the Southeastern territory by W. R. Hunt, formerly with the Caterpillar Tractor Co.

J. J. Murray, who has served in various export capacities with Hewitt-Robins, Inc., during the past 28 years, has been appointed to the newly-created position of export manager for the corporation.

Jack R. Gregson has been appointed district sales manager of the bucket department of the Wellman Engineering Company, Eastern territory, with offices at 2612 Graybar Building, 420 Lexington Avenue, New York, N. Y. He was formerly associated with the Lima Shovel and Crane Division, Lima Locomotive Works.

John H. Poulson has been named to the board of regional sales supervisors of the Eutectic Welding Alloys Corporation. He became associated with Eutectic as a field engineer, was advanced to the position of assistant to the general sales manager and has recently been appointed as a Eutectic regional sales supervisor in eastern United States and Canada.

Herman Larsen, experimental engineer for the Four Wheel Drive Auto Company for the past 28 years, died recently in Colorado Springs, Colo. Mr. Larsen was one of the oldest employees in point of service of the company, having first worked for F.W.D. when it was still building passenger cars.

A member of the committee on Winter Driving Hazards of the National Safety Council, Mr. Larsen was very active in the research work of that group for the past several years.

The appointment of S. DeVries as exclusive sales representative for the new Haiss line of material handling equipment in the state of Connecticut, was announced by the George Haiss Mfg. Co., Inc., New York City, division of Pettibone Mulliken Corp.

A. J. Roubal has been promoted from chief draftsman to the crushing, cement and mining section of the Allis-Chalmers basic industries machinery department to a staff development engineer of the department.

In this new post, Mr. Roubal, who has been with Allis-Chalmers since 1914, will have charge of the development of new machinery and equipment or the redesign of existing machinery for the basic industries machinery department. George O. Verch has been named chief draftsman to succeed Mr. Roubal, and Eugene G. Wutke has been appointed assistant chief draftsman of the department's pyro-processing section succeeding Mr. Verch.

Completion of extensive expansion at the Elyria Parts Division was announced recently by A. W. Smythe, vice-president and general manager of The Thew Shovel Co. Included in the expansion program were additions to Thew plants Nos. 3 and 5, both located near Hazel and Beech Streets, Elyria, O., which were enlarged in accordance with a long-range plan initiated in March, 1943.

The Parts Division was set up as a separate entity, entirely segregated from and independent of all new machine production at Thew's Lorain plants. It is virtually a separate company, with its own buildings, its own management, sales, purchasing, planning, pricing, parts catalog and inspection departments. As such, it is set up to anticipate parts requirements, with complete control over its advance ordering, stock requirements, inspection and all other operations essential to give better parts service.

Key officials in Elyria are A. W. Wagner, manager of parts sales; N. W. Anderson, superintendent at Plant No. 3; and Cyril Brecknock, superintendent at Plant No. 5.

Atlas Chain and Manufacturing Co., Philadelphia, announced the appointment of O. W. Schmidt as Central States District sales manager. Mr. Schmidt, formerly sales manager for the Shafer Bearing Co. of Downers Grove, Ill., will maintain offices in Chicago.

2 NEW WILLSON MONO Goggles

Newly styled plastic eye protection with choice of curved or flat lenses offer new features designed to add to their already predominant popularity. The WILLSON MONOGOGGLE, just over an ounce in weight, is the answer to getting safety equipment worn on many hazardous jobs.

- The new flat lens design retains all the safety features of the curved lens.
- Both provide ample room for wearing of prescription glasses in comfort. The flat style, however, provides additional clearance for molded spectacle frames.
- New drop-eye shape gives wider vision.
- Greater ventilation area provides better air circulation and more wearer comfort.
- Both new designs available in clear acetate frames or the new flexible, mottled-brown, polythene frame.

WILLSON*

For complete information on these products and their application, as well as other eye and respiratory protective devices, get in touch with your Willson distributor or write us direct.

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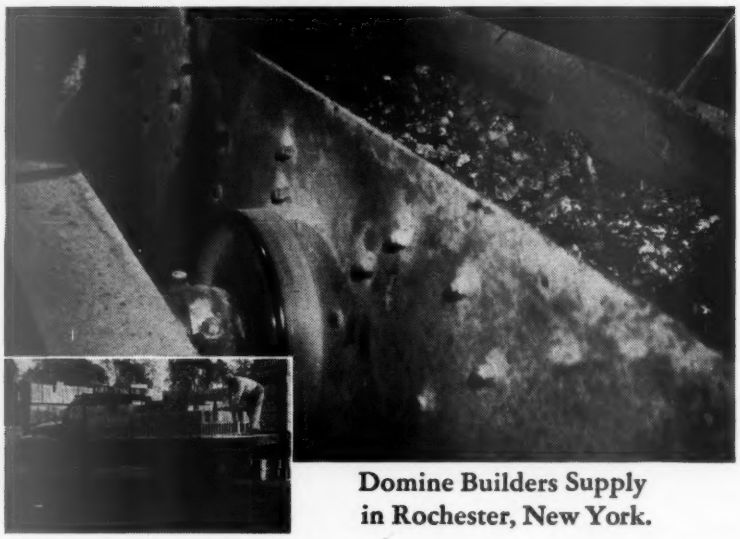
This SECO accurately screens 25 YARDS OF CINDERS PER HOUR...



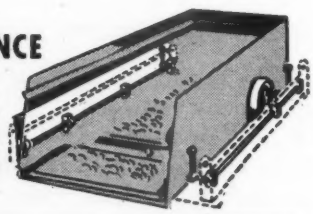
Domine Builders Supply
in Rochester, New York.

Now in fifth year of service Never shut down for repairs

● This Seco 3′ x 10′ double deck screen pictured above is installed in the modern concrete block plant of Domine Builders Supply in Rochester, New York. Mr. Domine reports that during the nearly five years of service this Seco has never been shut down for repairs. Its excellent conveying action keeps the cinder load moving over the screen for high capacities . . . of accurately screened cinders. Although located high up near the roof of the plant, it operates so smoothly that no vibration passes into the platform on which it is mounted.

ADVANCED ENGINEERING PRODUCES BETTER PERFORMANCE

In outline is Seco's patented Equalizer Assembly. This controls the true circular action of the screen in operation. Increases tonnages . . . improves sizing . . . prevents bobbing . . . weaving, reduces maintenance.



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SCREEN EQUIPMENT CO., INC., BUFFALO 21, NEW YORK
In Canada: United Steel Corp., Ltd., Toronto

The 50th anniversary of the Goodyear Tire & Rubber Company was celebrated with a three-day program in October. About 1700 key executives took part in the festivities, several being called home from foreign countries where they are serving the company. The 450,000th Goodyear pneumatic tire was produced in one of the Akron plants during the celebration.

The Akron observance was the first of many anniversary dinners held in 54 cities where Goodyear has production or sales operations, and also in all foreign countries represented at the local gathering.

G. A. Gilbertson recently joined the Frank G. Hough Co. of Libertyville, Ill., as vice-president. Mr. Gilbertson recently resigned as assistant sales manager of the Industrial Power Division of the International Harvester Co.

W. F. Armstrong is the new general manager of the Chevrolet Motor Division. A vice-president of General Motors, Mr. Armstrong has been in charge of the corporation's manufacturing and real estate staffs since 1944. His experience includes executive posts with three other G.M. divisions. Mr. Armstrong succeeds the late Nichlos Dreystadt.

C. P. Corrigan has been appointed district sales manager for the Cleveland area of the Ramapo Ajax Division, American Brake Shoe Company. Mr. Corrigan joined the company in 1939.

Raybestos-Manhattan, Inc., announces its new modern Los Angeles warehouse and office at 4651 Pacific Boulevard, Los Angeles 11, to service and stock rubber goods and packings for industrial and oil field requirements for southern California. Principal products carried are conveyor belts, V-belts, transmission belts, industrial rubber hose of various types, rotary oil well drilling hose, asbestos and rubber packings for industrial and oil well machinery. The warehouse will be in charge of Schuyler V. V. Hoffman.

T. Bartow Ford, manager of foreign sales, The Dorr Company, New York, has left on a round-the-world trip by air, during which he will visit several of his company's widely scattered offices, and representatives and resident engineers in the foreign field.

William H. Starbuck was recently made assistant general sales manager of the Kellogg Division of the American Brake Shoe Company. Formerly a sales representative, Mr. Starbuck served in various sales capacities since joining the company.

The Cambridge Wire Cloth Company, Cambridge, Md., has announced the opening of a sales office in Houston, Tex. District sales engineer in charge of the new operation is Charles E. Shuman. The territory covered by the new office will include Texas, Oklahoma, Arkansas, Louisiana and Mexico.

The Inland Machinery Co. of LeGrande, Ore., has been appointed a distributor of "Caterpillar" products in five eastern counties of Oregon. The new distributorship is headed by Robert R. Carey as president, J. Donald Steinbeck and C. E. Millering as vice-presidents, and W. Ned Jones as secretary-treasurer. Offices will be at 212 Greenwood Street, LeGrande, Ore.

Inland Machinery Co. will sell and service the complete line of "Caterpillar" diesel track-type and wheel-type tractors, diesel engines, diesel motor graders and earthmoving equipment.

S. R. Zimmerman Jr. has been named director of friction material research and development for Raybestos-Manhattan, Inc. He will direct the corporation's research and development activities at its plants in Stratford, Conn., Manheimm, Pa., Passaic, N. J., and North Charleston, S. C.

Henry J. Howlett, secretary of the American Management Association for the past 13 years and director of A.M.A.'s national packaging exposition and conference on packaging, packing and shipping, has been appointed president of Container Laboratories, Inc., the nation's largest packaging and packing engineering consultants with laboratories in New York, Chicago and San Francisco, and offices in Los Angeles and Milwaukee.

L. P. Littell, former manager of the Salt Lake City sales office of Bemis Bro. Bag Co., has relinquished his direct selling responsibilities, but will remain in company service in an advisory capacity and will carry on other special duties in that territory. Mr. Littell joined Bemis in 1909 and has been in charge of the Salt Lake City sales office for 30 years, except for one period when he headed the Bemis Denver sales office.

Mr. Littell is succeeded by Robert J. McDonald, previously with the Bemis Denver sales office, who has taken the direct selling responsibilities of the Salt Lake City office. Mr. McDonald has been with Bemis since 1935.

Gerald W. Wilson and William F. Jordan have been appointed district representatives in the Eastern sales division of Caterpillar Tractor Co., Peoria, Ill.

Mr. Wilson will represent the company in contacts with distibutors in northern Georgia, South Carolina and eastern Tennessee, while Mr. Jordan will contact dealers in northern Ohio, Michigan and West Virginia.

Erik A. Johnson has been appointed general traffic manager of Bemis Bro. Bag Co. at Chicago, succeeding W. R. Huey, who died on August 22. Mr. Johnson joined Bemis at Brooklyn in 1921. He has been traffic manager at the Bemis Brooklyn plant since 1926 and has also handled traffic for the company's Boston jute department for many years.

Better grinding starts here

ASK the mill superintendents using **U·S·S LORAIN ROLLED PLATE LININGS.**

"All-time highs in lining life" . . . "New performance records" . . . "Lower maintenance costs" . . . "Replacements kept at a minimum"—are reports that are typical.

Why these outstanding results?

Because Lorain Linings are rugged and durable. Are adaptable to any mill, in the diameter, length or thickness required. And because they have been designed for quick, easy handling.

And on **U·S·S GRINDING BALLS,** reports have been equally favorable. That's because U·S·S Grinding Balls are forged from special analysis steel. Are accurately heat treated to take the punishment of the longest, heaviest runs. And because they maintain a standard of quality that insures uniformly superior results.

U·S·S Grinding Balls available in standard sizes from ¾" to 5" in diameter. Names of grinding mill manufacturers who distribute U·S·S Lorain Plate Linings will be furnished on request.

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COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
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"KEEPS
PROMISES"

legal decisions

By LEO T. PARKER

Exemplary Damages

According to a leading higher court any seller who practices deceit, fraud or malice in selling materials, supplies or equipment may be held liable for heavy *exemplary* damages.

In *Saber v. White Company,* 56 N. E. (2d) 224, a person named Saber sued a seller to recover damages based on allegedly fraudulent sale of a practically worthless mechanical device. Saber asked the court to allow him a judgment for $33, the amount paid for the device, and $5,000 exemplary damages.

The seller had advertised that he handled only "quality" merchandise, and although the jury decided that he falsely represented the merchandise, it rendered a verdict in favor of Saber for $33, but refused to allow $5,000 exemplary damages. But the higher court reversed this verdict and said that the jury was justified in allowing Saber $5,000 exemplary or punitive damages.

Lease Not Extended

Recently a higher court held that if a written lease contract gives a lessee the right to extend a lease by giving the property owner a *written* notice of his extension, the lease is *not* extended by a *verbal* notice.

For example, in *Medomak Company v. York,* 57 Atl. (2d) 745, it was shown that the Medomak Company and a land owner named York signed a lease which ran for a period of five years and granted to the company the option to renew the lease for five years, if the company gave York *written* notice.

At the end of the 5-year lease the company failed to give the land owner a written notice that it desired and intended to renew the lease. However, the counsel for the company proved that the land owner had *verbally* agreed to extend the lease.

In subsequent litigation the higher court held that the land owner could *refuse* to extend the lease, saying:

"The giving of the written notice was a condition precedent to an extension of the lease for an additional term of five years. . . . Since written notice was a condition precedent to effect an extension of the lease, and was never given, the right to an extension of the lease was lost."

Right to Remove Equipment

Modern higher courts consistently hold that permanent buildings erected by a tenant on leased premises are *not* removable from the premises unless the lease clearly reserves to the lessee this right. Moreover, when the lease contract stipulates that structures shall belong to the landlord on the expiration of the term, the latter acquires ownership in such structures the instant the tenant places same on the property.

For instance, in *Roan Marble & Granite Company v. Standard,* 154 S. E. 518, the testimony showed facts, as follows: A granite company leased certain of its property to an oil company. The lease contract stated that the oil company should use the leased land for the sole purpose of conducting and operating a gasoline filling station. Under the terms of the lease, the oil company had the right to erect on the leased premises, buildings, structures, tanks, improvements, equipment, and appliances, and these structures *were to belong to the granite company* at the termination of the lease. The oil company became bankrupt soon after signing the lease and the trustee in bankruptcy attempted to remove the tanks and other equipment from the property.

In holding the granite company entitled to retain *all* equipment on its property as its own, the court said that the instant the oil company made improvements on the land, such improvements were legally owned by the granite company.

Car Stolen From Parking Lot

Considerable discussion has arisen from time to time over the legal question: Is an employer liable for theft of an automobile from a parking lot furnished free to employees? According to a recent higher court the answer is, *no.*

For example, in *Clearwater Mills v. Wheeler,* 49 S. E. (2d) 184, the testimony showed facts, as follows: The Clearwater Mills furnished a parking lot free for use of its employees. One day an employee drove his automobile through the gate and onto the parking lot and removed his switch keys and went into the factory ready to begin work at midnight. When the automobile went through the gate the gateman, who is a private policeman for the company, was on duty at the gate. While the employee was at work his car was stolen. The testimony showed that thieves drove the car through the gate without being stopped by the gateman. The employee sued the company for value of his automobile.

The lower court held the company liable but the higher court reversed the verdict, saying:

"It would have been impossible for the defendant (company), under the plan followed in this case, to protect an employee's car during the hour the gate was unlocked. There was no check on any car and no effort made to see that any particular employee got his own car."

Buyer Inspected Trucks

Recently a higher court was asked to decide: When is a seller *not* liable to the purchaser who proves that purchased equipment was defective and unsatisfactory. The answer is: When the seller gave *no* guarantee, and the purchaser examined or inspected the equipment before purchasing it.

For example, in *Beers v. Martin,* 190 Pac. (2d) 573, the testimony showed that a seller sold and delivered three trucks with supposedly good motor trucks to a buyer who promised to pay the sum of $22,000. A check given by the buyer as payment for the trucks was returned unpaid to the seller, who then sued the buyer for $22,000.

The buyer defended the suit by proving that shortly after delivery of the trucks trouble developed with the tires and mechanism.

Since the buyer *had inspected* the trucks and tires *before* purchasing them and the seller had *not* given any specific guarantee the higher court ordered the buyer to pay the seller $22,000, and said:

"The parties originally intended to, and did, enter into the contract for the sale of the trucks. The lower court found that there was no warranty on the part of the seller; that the purchasers were experienced and had an opportunity to observe and examine the trucks before the sale; and that they knew what they were buying."

Inhaled Dust

According to a recent higher court, if an employee is suffering from silicosis, all that he needs to prove to recover compensation is that he was exposed to dust while employed by the employer.

For illustration, in *Industrial Indemnity Exchange v. Industrial Accident Commission,* 197 Pac. (2d) 75, an employee died from silicosis. His dependents sued to recover compensation under the State Workmen's Compensation Act.

The higher court awarded compensation saying that the testimony proved that while employed at the Winston plant he "was exposed to dust in deleterious amount and contracted the disease of silico-tuberculosis." This court said:

"Having arisen out of and in the course of his employment the disability 'constitutes an injury within the meaning of the Workmen's Compensation Law'."

Court Believed Nurse

Generally speaking, it is useless for an injured employee to apply for compensation based on testimony of relatives and friends, when such testimony is contradicted by a nurse or a physician.

For illustration, in *Richardson v. Mathieson Alkali Works, Inc.,* 36 So. (2d) 278, it was shown that one Richard-

son was employed by the Mathieson Alkali Works, Inc., as a laborer in an alkali plant. One day Richardson while engaged in removing burned lime out of a lime kiln, accidentally stepped into some hot powdered lime with his left foot. As a result he suffered burns on his left foot, near the ankle. He was paid compensation of $70.00, and was discharged by the company's nurse as being fit to return to work.

Later Richardson sued for extra compensation, claiming that both his left and right legs became infected with ulcers which he attributes to the accidental burning. Richardson testified that he had burns on both legs at the time of the accident. His wife stated that when he came home he had burns on both legs, and some of his neighbors and friends also testified to the same effect. However, the nurse who treated Richardson was positive that the only burns were to Richardson's left ankle, and that she examined the right leg and that there were no burns on the right leg. The physician who attended Richardson verified the nurse's testimony.

The higher court refused to award Richardson additional compensation, saying that the evidence did not prove that ulcers, lesions or sores on both legs were the result of burns suffered on his left foot when he accidentally stepped into the hot powdered lime. In other words, the court believed the testimony given by the nurse and physician.

Employer Not Concerned

According to a recent higher court an employer cannot sue and prevent an injured employee from receiving compensation under the State Workmen's Compensation Act.

For example, in *State ex rel. Hobart Mfg. Company v. Blake,* 80 N. E. (2d) 153, the lower court awarded compensation to an employee, under the State Workmen's Compensation Act, based on total disability from silicosis. His employer filed suit to invalidate the award on the grounds that the undisputed facts show that silicosis was only one of several causes of the employee's total disability.

The higher court refused to listen to the testimony, saying: "An employer has no interest in the distribution of the state insurance fund and is not aggrieved until a merit-rating system is applied to him, which takes into account the distribution of awards to claimants employed by such employer."

Facts Misrepresented

A few days ago a reader made this inquiry: "We operate a stone quarry. Recently we purchased adjoining land through a real estate agent. Now the seller of this land refuses to go through with the deal saying that the real estate agent did not tell him the truth that our company was the purchaser. Are we liable for misstatements made by the real estate agent?"

According to a leading higher court decision a property owner can rescind a contract to sell his land, if he proves that the real estate agent who represented the purchaser misrepresented facts.

In Gloede v. Socha, 226 N. W. 950, it was disclosed that a property owner leased his sand and gravel pit to one White for a term of five years. A competitive sand and gravel company employed a real estate agent to induce the property owner to sell the property for $22,000. The testimony showed that the real estate agent falsely stated to the property owner that he represented a fictitious buyer, and not the competitive sand and gravel company. Then the property owner signed the agreement to sell the property, and accepted $2,000 as deposit.

Two days later, White discovered the competitor's employes removing sand from the land. Soon afterward the property owner notified the competitor that he rescinded the contract to sell the property and returned the $2,000 deposit.

In subsequent suit, the higher court held the property owner within his legal rights in refusing to complete the deal to sell the property to the competitor, stating the following important law:

"Plaintiff (competitor) as well as his real estate agent well knew that the misrepresentations, concealment, and deceit practiced misled the defendant (property owner) and that, relying thereon,

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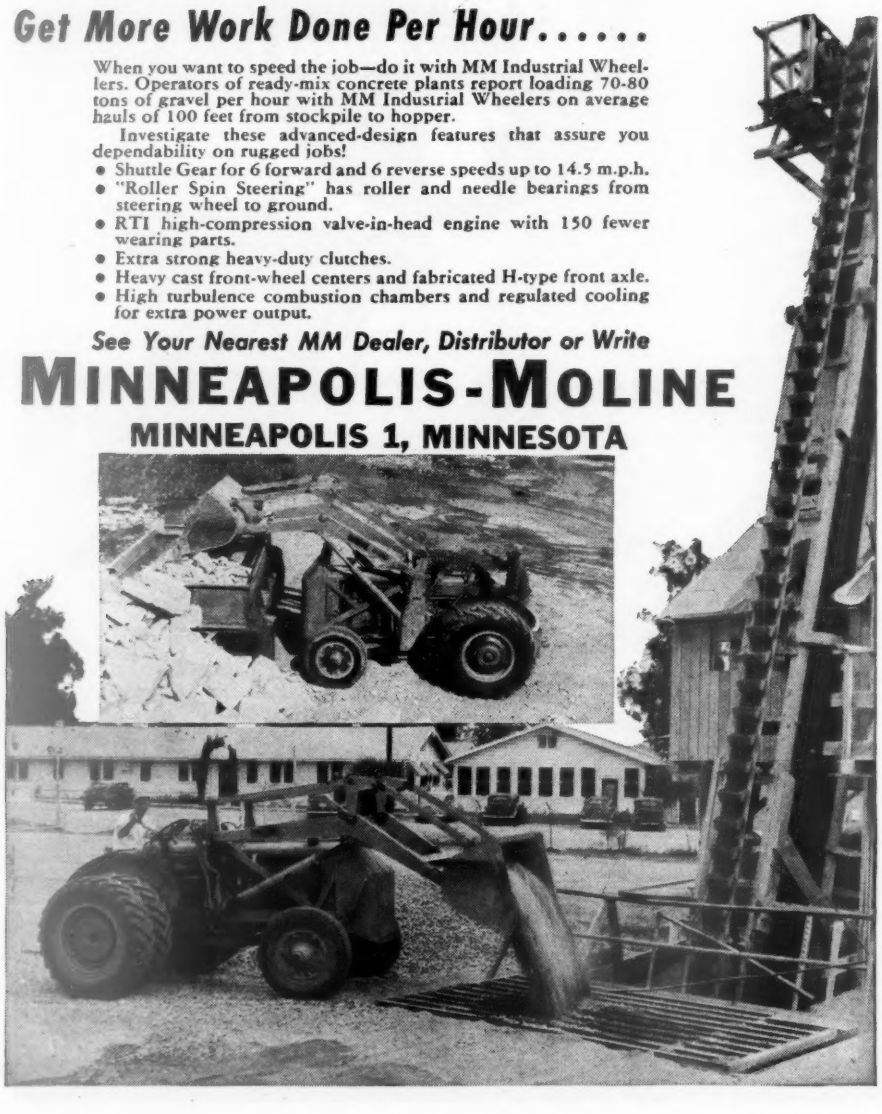

he was induced to sign the contract. Under the circumstances, the plaintiff (competitor) is chargeable with all of Blessinger's (real estate agent's) misconduct and sharp practice in dealing with the defendant. . . . Consequently plaintiff is in court with unclean hands."

Boy Drowns in Gravel Pit

Another reader presented this commonly asked legal question: "We have a gravel pit filled with water. Does the law compel us to build a fence around this pit and post warning signs to safeguard children from drowning in it?"

According to a recent higher court a gravel pit is not such a "dangerous instrumentality" that the law imposes upon the owner the duty to take unusual precautions to prevent children from using it.

For example, in *Wash v. Northern Virginia Const. Company,* 48 S. E. (2d) 276, reported August, 1940, the testimony showed facts, as follows: The Northern Virginia Construction Company is engaged in quarrying rock and gravel on its own land. In the conduct of this enterprise the company has opened a large pit from which rock and gravel have been removed. Water has filled the deep holes and covered the bottom of the shelves so that it is impossible to distinguish by sight the shallow from the deep water. Someone had built a raft of boards or logs and left it in the pit.

One day a boy nine years old, with his playmates, was playing in the water in the pit. The boy walked to the raft, and, while playing on it, fell into the deep water and drowned. The boy's father sued the Northern Virginia Construction Company for heavy damages, contending that it was liable because officials of the company knew that children were accustomed to use the water in the pit as a wading or swimming hole and it became the duty of the company to erect a *fence* around the pit or to post appropriate warning signs to warn persons and children of the danger of playing near the pit.

In holding the company *not* liable, this court said:

"Similar conditions exist on the banks of streams and rivers, natural and artificial ponds and lakes, which are found in every section. It would take more than a mere warning sign, fence, or any ordinary barricade to prevent adventurous boys from fishing in a still pool, or taking a swim in a natural or artificial pond."

For comparison, see *Peters v. Bowman,* 115 Cal. 345. This court said:

"A pond, although artificially created, is in no wise different from those natural ponds and streams which exist everywhere and which involve the same dangers and present the same appearance and the same attractions to children. . . . A pond cannot be rendered inaccessible to boys by any ordinary means. Certainly no ordinary fence around the lot upon which a pond is situated would answer the purpose."

8 GILSON FEATURES

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
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6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

GILSON Mechanical Testing Screen

• This machine is designed for the efficient sizing of test samples of crushed stone, gravel, slag and similar materials. It accommodates samples up to one cubic foot, making from two to seven separations simultaneously, in five minutes or less.

Smaller amounts of very fine materials may be handled efficiently and the screen used for research or other special mass separation jobs down to 100-mesh or finer.

Where exacting specifications are required the Gilson Screen eliminates guesswork — avoids errors and reduces operating delays. A controlled and truly guaranteed product is now possible with the Gilson Testing Screen. For fast accurate sizing of coarse or fines from 4" to 200-mesh specify a Gilson Testing Screen.

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WHAT'S THE SIZE OF YOUR CRUSHING JOB?

American "ACS"

Americans offer the *action* and the *capacity* you need.

For heavy-duty reduction of one-man size to roadstone or agstone the American "ACS" Hammermill offers 3 sizes—up to 250 TPH.

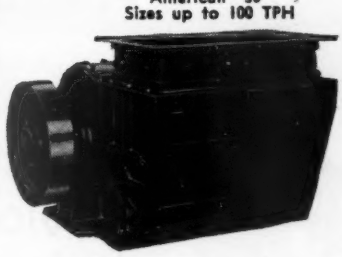
Center feed models produce a higher ratio of fines through longer travel of stone in hammer cycle. Front feed models minimize fines.

"BRUTE"

"BROADHEAD"

"SPLITTER"

American "30" Sizes up to 100 TPH



American "24" Sizes up to 50 TPH

Send for "Better Stone Crushing" Booklet.

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Originators and Manufacturers of Ring Crushers and Pulverizers

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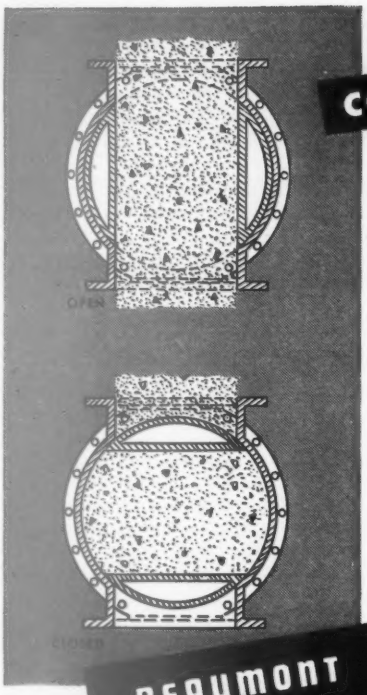

CONTROL MATERIAL FLOW

. . . with a Gate

THAT DOESN'T CLOG

Because the material in the gate body rotates with the machined rotor to cut off flow, Beaumont Rotary Gates are always easy to open and close. And, when the gate is open, there is no restriction to flow since the rotor opening is the same diameter as the pipe.

Beaumont Rotary Gates are quick acting, dust-tight and can be used at any angle for such fine materials as soot, cement and lime. They are made from any practical material—stainless steel, aluminum alloy, cast iron, nickel, etc. in sizes ranging from 4" to 12".

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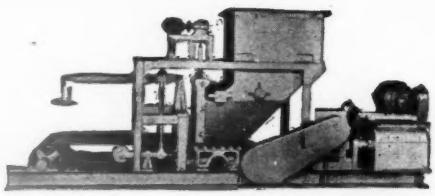

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This machine is a "*master*-of-all-trades" for combining the functions of an all 'round scale.

SCHAFFER Poidometers operate automatically, and assure precision weighing and recording in handling raw and finished materials.

The units are durably constructed, and show high output and insure uniformity in production.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO., 2828 Smallman Ave., Pittsburgh 22, Pa.

Questions and Answers

PIT AND QUARRY,
538 S. Clark St.,
Chicago 5, Ill.
Attn.: Mr. Leo T. Parker, Legal Editor:
Dear Sirs.

Question: Does a local gravel plant selling washed gravel and sand f.o.b. trucks over its scales, to county- and state-owned trucks for delivery entirely within confines of the state of Mississippi, for use in building and maintaining local, neighborhood, and farm-to-market roads come under the Fair Labor and Standards act?

The Lynn Sand & Gravel Co., a trade name, owned and operated by Kochtitzky and Johnson, a partnership, constructed a gravel and sand washing and processing plant in Yalobusha County, Miss., about 12 miles north of the town of Grenada, Miss., to supply sand and gravel for two government-built earthen dams each about 15 miles distant from its gravel plant. This gravel and sand is sold and delivered by hired trucks on a per ton basis to the prime contractors at their respective jobs.

The U. S. Engineers ruled, prior to letting, that processing sand and gravel without the confines of the dam area and delivery by trucks to the dam site did not come under the jurisdiction of labor rules applicable to dam construction.

While standing by to serve the two dams, the gravel company sold over its scales a relatively unimportant amount of gravel to county supervisors for use to repair and maintain "by" roads to schools, churches and possibly some farm-to-market roads, all well within the confines of the state. Also, the state of Mississippi procured a few loads to repair state-maintained roads. Also a few loads of sand and gravel have moved from this pit, on trucks we did not own for miscellaneous privately constructed buildings such as garage floors, store buildings, foundations for houses, etc.

The local representative of the Fair Labor Standards Act is disposed to rule that all work at this pit comes under the laws derived from this act, a part of which is a 40-hour week and time and one-half for overtime, etc., all this to be retroactive to the beginning of operations at this plant, which is some five months ago.

The local representative of F.L.S.A. maintains that the county roads, as unimportant as they may seem, are under jurisdiction of the Interstate Commerce Commission, or rather a contributary of it, and therefore under the F.L.S.A.

He conceded that sand and gravel moving to dam sites is no part of the interstate commerce system and therefore this operation is exempt from the laws.

This pit does not have railroad connections, and no gravel processed here will be loaded on railroads. The location of this gravel pit is such that no gravel or sand can ever be economically moved across the confines of the state of Mississippi, and when the dams are

completed, this pit will most likely be abandoned.

We have before us two issues of PIT AND QUARRY that cite two different rulings on somewhat similar cases, *viz.* September, 1945, page 113, in which you conclude "If all the rock you quarry and sell is used in the state, you are exempt." But in the February, 1947, issue, page 114, the ruling leaves us somewhat in doubt.

Please write us, in your opinion, based on the above facts, whether or not we are exempt.

Please write us, on the basis of the above facts, whether or not, in your opinion, the wage and hour law provided in Fair Labor Standards Act applies. Please give all the references to late decisions at your disposal, that form the basis of your opinion.

If we are being imposed upon, we are disposed to "go to bat." If, however, the cards are against us, we are disposed to submit.

Very truly, L. S. & G. Co.

My dear Sir:

Responsive to your letter of December, 22, the writer has written up in PIT AND QUARRY all important higher cases on the Fair Labor Standards Act. Also, in new articles the latest cases will be reported. It is true that the courts have laid down the law that in every case where interstate commerce is affected the seller and manufacturer and processor of merchandise is within the scope of the F.L.S.A. Hence, it is my advice that you operate your business in accordance with this law. That will avoid for you expensive litigation. I give this advice because in reviewing the many cases I have "briefed" the majority have held sellers within the scope of the law where any part of their sales "advance" interstate commerce.

In view of the fact that you have read my reports in PIT AND QUARRY I realize that it is unnecessary to review for you these various cases. You will remember that where a seller of sand and gravel sold same to a railway company, and no other sales were made in interstate commerce, this company was held to be within the scope of the F.L.S.A.

In another case the Supreme Court of the U. S. held that window washers are within the scope of the law because in washing windows these employees helped advance interstate commerce transactions because those in the offices were better able to attend to their work in view of the fact that clean windows admitted light. And in another case it was held that a company that sold *only* to buyers within the state was within the scope of the law because the buyers used the product to pack and ship their merchandise to purchasers in other states. And also, it was held by the Supreme Court that a company that drills oil wells is within the scope because the oil was shipped interstate.

Hence you can well observe that the majority of courts are in favor of *broad* construction of the F.L.S.A.

Sincerely,

LEO T. PARKER.

traffic news

CENTRAL FREIGHT ASSOCIATION DOCKET

Docket 86615 (2)—Established on dolomite, roasted (refractory dolomite, in granular form, treated or untreated, clinkered or burned to a dead state), carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Durbin, O., to Louisville, Ky., 406 cents net ton.

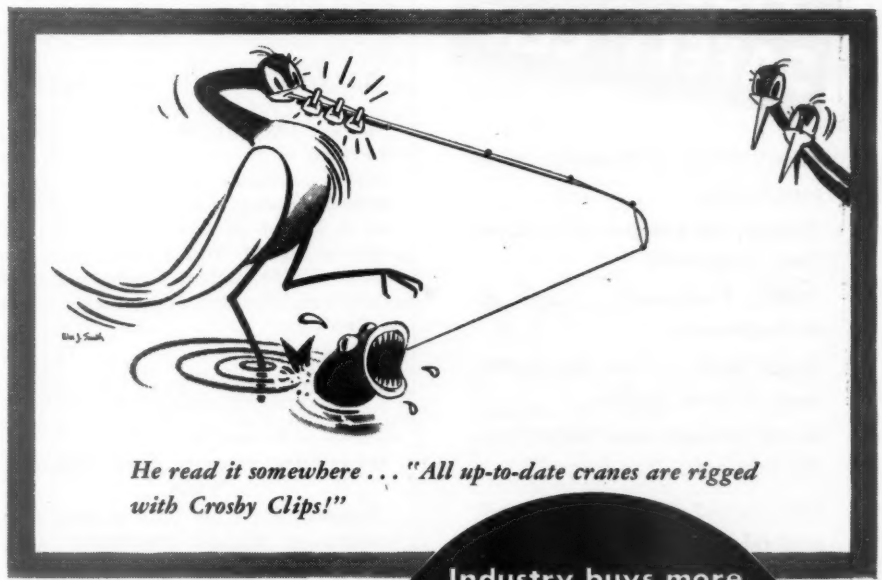
Docket 86618 (2)—Establish on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, moulding or silica) and gravel, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Chillicothe, O., to Charleston, W. Va., 183 cents net ton.

Docket 86628 (2)—Establish on crushed stone, fluxing, furnace, foundry, melting or refractory unburned, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when loaded to visible or cubical capacity, actual weight will apply from Calcite, Mich., to Barberton, O., 226 cents gross ton.

Docket 86629 (1)—Sand, all kinds, and gravel, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply. Establish on from Glass Rock, O., to Taylor, O., 133 cents net ton in open-top cars, 153 cents net ton in box cars.

Docket 86534 (2)—Establish on slag, crude (the product of iron and steel furnaces), not crushed, ground or pulverized, carload minimum weight marked capacity of the car, from Jackson, O., to New Boston, O., 103 cents net ton.

Docket 86588 (2)—Rip rap stone, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Marengo and Milltown, Ind., to New Harmony, Ind., 166 cents net ton.



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Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy . . . applied anywhere by one man with one wrench. *Drop-forged*, not cast. Hot dip galvanized. All sizes . . . for 1/8" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND AMERICAN BLOCKS AND SHEAVES

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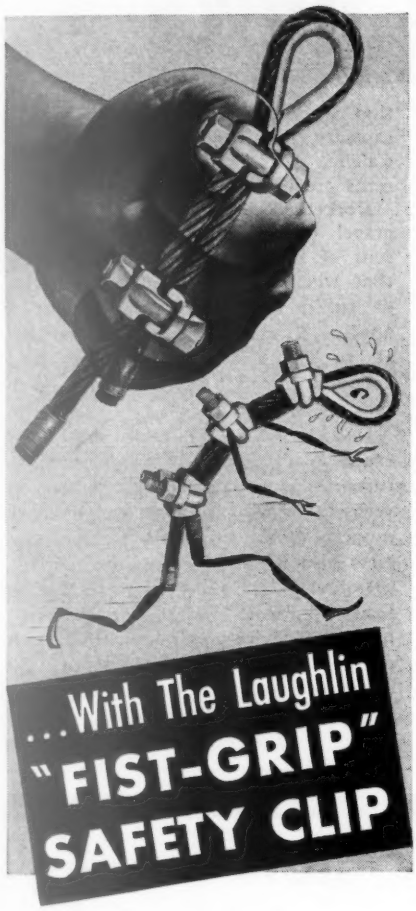

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Won't Crimp or Crush... rope lasts longer.

Simple, easy to put on... saves time, manpower.

100% Foolproof... can't go on backwards.

Super Grip... two clips do the work of three U-Bolts.

Extra Strength and Safety... clip and bolts drop-forged.

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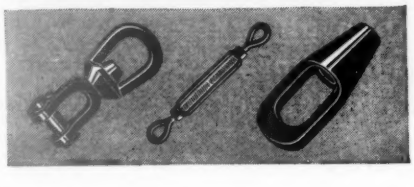

Docket 96594 (2)—Establish on crushed stone or stone screenings, carload minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply from Marengo and Milltown, Ind., to Griffin, Hovey, Martin, New Harmony, Poseyville, and Stewardsville, Ind., 166 cents net ton.

Docket 86600 (2)—Establish on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open cars, carload minimum weight 90 percent of marked capacity of car furnished, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Nashua, Pa., to various representative points in Michigan, New York, Ohio, Pennsylvania and West Virginia, rates shown in exhibit D:

To	
Ecorse, Mich.	290
Buffalo, N. Y.	228
Cleveland, O.	148
Youngstown, O.	79
Bessemer and Pittsburgh, Pa.	127
Butler and Trafford, Pa.	152
Erie and Meadville, Pa.	173
Benwood, W. Va.	139

Docket 86635 (2)—Establish on limestone, agricultural, in open-top equipment, carload minimum weight 90 percent of marked capacity of car, except that when loaded to full cubical or visible capacity, actual weight will apply from Marion, O., to Belpre, O., 194 cents; Marietta, O., 188 cents and Torch Hill, O., 183 cents per net ton.

Docket 86683—It is proposed to establish on limestone, agricultural, unburned, in closed equipment, carload minimum weight 60,000 pounds from Piqua, O., to Sandusky, Mich., a rate of 288 cents per net ton.

ILLINOIS FREIGHT ASSOCIATION DOCKET

Docket IRC 511-795—Crushed stone, as described in rule 20, I.C. Railroad tariff 13321-1, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Ullin, Ill., to various Southern Railway stations in Illinois: Proposed rates to (representative):

Walnut Hill	1.16
Marlow	1.24
Wayne City	1.32
Merriam, Mt. Carmel	1.39

Present—class or combination. Rates subject to X-162-166 increases.

WESTERN TRUNK LINE ASSOCIATION

Supplement 1 to X-E-41-1020—Stone, crushed or ground, minimum weight marked capacity of car, except that when car is loaded to full visible capacity, actual weight, but not less than 50,000 pounds, will apply:

From Weeping Water, Nebr., Cannon, Mo., Valmeyer, Ill., Prairie du Rocher, Ill., Quincy, Ill., White Bear, Mo., Mosher, Mo., and Hannibal, Mo., to Minneapolis, Minnesota Transfer and St. Paul, Minn. Proposed, 80c per net ton reduction in present rates.

Docket E-41-1020—Supplement 2—It is proposed to reduce the present rate on stone, crushed or ground, carload from Louisville, Nebr., and Carthage, Mo., to Minneapolis, Minnesota Transfer and St. Paul, Minn., 80c per net ton.

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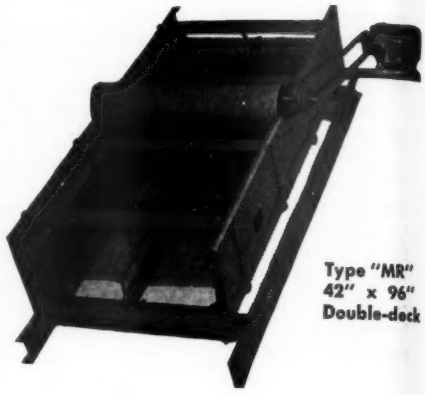
Vibrating Screens

Rugged, efficient and economical, they're your best bet for satisfactory screening!



Type "MR" 42" x 96" Double-deck

Get acquainted with their design and advantages. Write today for catalog No. 107 on Screens and Screening!

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RACINE - - WISCONSIN

New FARREL-BACON CRUSHER has many advantages

Design features of this 36 x 30 E stone crusher include: (1) Meehanite frame, sectionalized when necessary; (2) removable water cooled bearings; (3) improved design of swing jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive.

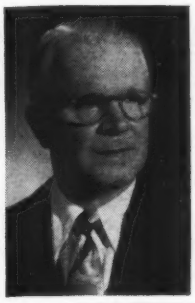
Write for further details or engineering help. BA-1

FARREL-BACON
ANSONIA, CONNECTICUT

NEWS OF CONCRETE MANUFACTURERS

Noble, Oakes to Handle Full Line of "Gocorp" Concrete Products Mach'y.

Two sales organizations in the concrete products field have just announced their association with the Gene Olsen Corp. of Adrian, Mich. They are Thomas W. Noble, Inc., of Chicago, and Oakes



Thomas W. Noble

E. W. Dienhart Jr.

Concrete Machinery, Inc., a new corporation with offices in Richmond, Ind.

The first-named organization has served the industry throughout the Middle West for the last 27 years. It will act as distributor for the complete line of "Gocorp" equipment in the states of Wisconsin, Illinois and most of Missouri, and in addition will serve western Indiana, eastern Iowa and the southeastern corner of Minnesota. Thomas W. Noble is president of the company, and E. W. Dienhart Jr. is vice-president and service engineer.

Oakes Concrete Machinery, Inc., in addition to handling the complete "Gocorp" line, will carry repair parts and attachments for all Stearns block machinery. The territory served includes the states of Ohio, Kentucky, West Virginia, southern Indiana, western Pennsylvania and western New York. The personnel includes Frank R. Oakes, president and general manager; Paul J. Shultz, vice-president in charge of the Western Division; Ralph G. Hill, vice-president in charge of the Eastern Division; and Elmer F. Hall, secretary and service manager.

Frank R. Oakes

Armstrong Given Sales Post By General Portland Cement

W. H. (Wes) Armstrong has been appointed assistant sales director of the Signal Mountain Portland Cement Division of the General Portland Cement Company, Chattanooga, Tenn. This announcement was made by L. B. Godfrey, sales director.

Mr. Armstrong was formerly connected with the Provident Life and Accident Insurance Company, serving in the capacity of special representative of the group department.

Prestressed Concrete Subject Of Newly Published Book

In his reecntly published volume, *Prestressed Concrete,* Professor G. Magnel describes the principles and practice of this new method of building in a way that will facilitate the design and execution of prestressed concrete structures.

A notable feature of the work is the simplicity of the design methods, which allow for the various losses of prestress. Principles described are in nearly all cases corroborated by tests made by the writer and by the behavior of structures he has designed. *Prestressed Concrete* describes among other topics the design of simply-supported beams and slabs, with numerical examples from practice; the design of continuous beams; and tests to determine the amount of creep on concrete and steel and to establish the fact of the high resistance to buckling of prestressed members. Published by Concrete Publications, Ltd., London.

The Thurston Company, manufacturing concrete, cinder and pumice blocks at Casper, Wyo., has installed a new automatic block machine which will increase production capacity approximately one-third.

Coming Events

January 31-February 3, 1949—Cleveland. Annual convention and exposition, National Concrete Masonry Association, Cleveland Auditorium.

February 14-17, 1949—New York. 19th annual convention, National Ready Mixed Concrete Association, Hotel New Yorker.

February 23-25, 1949—New York. 45th annual convention, The American Concrete Institute, Hotel Statler.

March 11, 12, 1949—Richmond, Va. Annual convention, American Concrete Pipe Association, John Marshall Hotel.

Fires Cause Costly Damage To Concrete Producer And Block Manufacturers

Fires at three concrete manufacturing plants, two in the East and one in Indiana, caused heavy damage to their owners. At Towson, Md., officials of the Clark Certified Concrete Company reported a $10,000 loss as the result of a blaze which destroyed a part of their concrete mixing plant.

Rockville, Md., was the scene of a spectacular fire which gutted the two-story cinder-block plant of the Rockville Fuel & Feed Company. Damage was estimated at $25,000. Expensive equipment, 20 rubber tires, a truck and a tractor and 30 tons of cement were destroyed.

The block plant of the Goshen Verilite Company, Goshen, Ind., was swept by flames early in December for the second time within two years. The blaze is thought to have originated in the boiler. In addition to damage to the building, a large quantity of cement was lost in the fire and by water damage. Some equipment was also burned.

New Texas Concern Produces Concrete "Stave-Blocks"

At Grand Prairie, Tex., near Dallas, L. A. Crouch & Sons, a newly established partnership, has introduced a new type of croncrete-block construction for storage buildings. The firm acquired its equipment by purchasing the property of the Hawkins Silo Equipment Company at Fort Worth.

Products of the concern are concrete stave interlocking blocks, one foot wide by 2 feet long, with joints staggered, tongued and grooved, and tied on the exterior with steel rods. The method is applicable only to buildings with curving outer surfaces, such as silos.

Waldport, Ore., is the location chosen by J. H. Massey and his son John F. Massey, who recently opened their pumice products plant in that city. The father and son are doing business under the firm name of Western Pumice Products.

Norman Hepp of Pasco, Wash., has announced the opening of assembly-line production at his plant, known as Pasco Products, Inc. At present Mr. Hepp is turning out standard and pumice block at his $56,000 plant; but he plans to include special block, fence posts, and similar products in the near future.

Solvay Sales Division Issues Booklet on Calcium Chloride in Concrete

A new 40-page semi-technical booklet, of interest to those concerned with specifications, design or production of portland cement concrete, has been issued by the Solvay Sales Division, Allied Chemical & Dye Corporation. This new book condenses from research and technical reports the effects of adding measured quantities of calcium chloride to portland cement mixes.

It contains tables, graphs and charts covering setting time, early strength, curing, slump, density, surface wear, shrinkage, and ultimate strength. Also shown are effects of varying temperatures and cold weather, and the results with special cements including air-entraining, high-early-strength, and low-heat cements. Copies may be obtained by writing Solvay Sales Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y.

T. J. Kauer Named Director Of Ohio Dept. of Highways

T. J. Kauer

Theodore J. Kauer was recently appointed to Governor Frank J. Lauche's cabinet as director of highways for Ohio, with headquarters in Columbus.

A graduate civil engineer of Ohio State University, Mr. Kauer was employed as a highway engineer by the Ohio Department of Highways from 1927 to 1940, serving as maintenance engineer, construction engineer, and division engineer in Cleveland, and in Columbus as federal projects engineer and acting chief engineer of construction.

Mr. Kauer resigned from the Ohio Department to serve with the Civil Aeronautics Authority in Washington, D. C., as an airport paving engineer. In 1941 he became assistant managing director of the American Concrete Pipe Association in Washington, D. C., where he remained until 1945. He resigned to act as managing director of the Wire Reinforcement Institute, Inc., in Washington, D. C.

L. J. Holzman Becomes Multiplex President-Manager

L. J. Holzman

Lawrence J. Holzman was named president and general manager of The Multiplex Concrete Machinery Company, Elmore, Ohio, at a recent meeting of the firm's board of directors.

Formerly vice-president of Parsons Engineering Corp., Cleveland, Ohio, Mr. Holzman is widely known in the foundry and aggregate fields. He has designed many of the dust control systems now used in these industries.

Mr. Holzman announced that Frank Muenzer, who has been with Multiplex for several years, will serve as vice-president of the company in charge of research and development.

New Concrete Plant Opened At Ponca City, Oklahoma

A new ready-mixed concrete plant was placed in full-scale production late last year by the Rock Island Lumber Co., of Ponca City, Okla.

Alva U. Carr, company manager, describes the plant as the most modern in the Southwest. It stands 72 feet high and affords a storage capacity of 357 tons of the stock materials used in the concrete mix.

S. W. Benedict Appointed Research Chief for Master Builders Company

S. W. Benedict

Stephen W. Benedict has been appointed director of research of The Master Builders Co., Cleveland, O., according to a recent announcement. For the last seven years Mr. Benedict has been materials engineer in the cement and concreting materials section of the National Bureau of Standards in the capacity of assistant chief of the Cement Reference Laboratory and consultant on statistical problems in the Division of Mineral Products.

Prior to joining the National Bureau of Standards staff, Mr. Benedict served as materials engineer with the Illinois Division of Highways and as structural engineer with the National Advisory Committee for Aeronautics.

American Concrete Pipe Assn. Schedules 41st Convention

An official notice issued by the American Concrete Pipe Association states that the 41st annual convention dates of that body will be March 10 to 13. Meetings will be held at the John Marshall Hotel, Richmond, Va.

On March 10 the board of directors will meet, and registration will proceed throughout the day. First social event of the convention will be the shad and oyster roast that evening.

Program plans are being completed by the entertainment committee under the leadership of Harry W. Easterly, chairman. On March 13 members and visitors will go by bus to Williamsburg for an outing which will include luncheon and a buffet supper.

● Trophies which will be awarded by Pit and Quarry to winners of the 1947-48 safety contest of the National Ready Mixed Concrete Assn. at the association's annual convention in New York. The one on the left was won by the Lubbock Building Products Company, Lubbock, Tex., as the No. 1 entrant in Class A. Pocahontas, Inc., Salisbury, Md., was the winner of the Class B trophy, shown at the right.

• A general view of the storage yard and plant of the Berthelet Fuel & Supply Company at Milwaukee, Wis.

New High-Capacity Block Machine and Continuous Mixer Installed by Berthelet

another ON THE SPOT report

THE Berthelet Fuel & Supply Co., 820 West Montana St., Milwaukee, Wis., has the distinction of being the first concrete block manufacturer to put in regular operation one of the new Type L5 Lith-I-Block machines. This machine makes three 8- by 8- by 16-in. blocks at one time and has a rated capacity of 720 blocks per hour. With the older stripper block machine still in use the total output of both machines has run from 800 to 1000 standard blocks per hour. This plant also has an installation of the new Kent "Stediflo" continuous mixer and has other features of interest to contemporary producers. The mixer has a rated capacity for 1100 standard blocks per hour and replaced two mixers—12-cu. ft. and 28-cu. ft.—of the conventional batch type.

By WALTER E. TRAUFFER

This company got its start 60 years ago as the Berthelet Pipe Co., making hand-tamped pipe in molds. The production of concrete blocks by hand methods began about 50 years ago, and sand and gravel for these products came from a pit on the property. When power block machines became available these were installed. The two latest were strippers installed in 1940 and 1941, one of which was replaced by the new Lith-I-Bar machine in November, 1948. In August of that year installation of the Kent continuous mixer was completed. This modernization program was begun after Ray W. Minette and John Vander Heyden of the Cities Fuel & Supply Co. took over active control of this company and reorganized it. Future plans include the installation of equipment for bulk handling of cement and the cubing of blocks in yard storage. The company has always handled building materials, and for the last 25 years coal has also formed an important part of its business. Sills, lintels, etc., are also made.

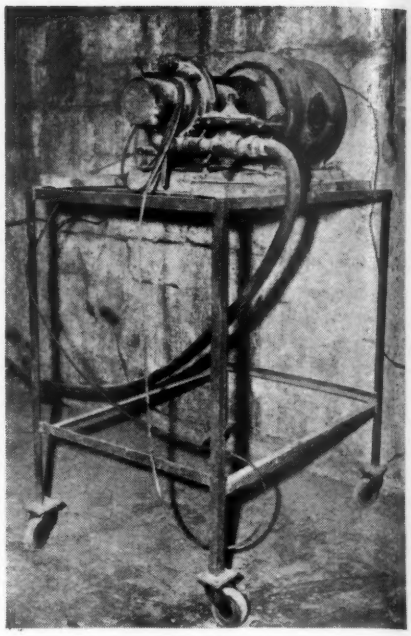
The aggregates used in this plant —sand and gravel and some cinders —are received by rail or truck and are stockpiled on the property. Enough storage is built up to carry the plant through the winter. A crane is used to handle the aggregates from the stockpiles into a yard hopper from which it is blended into trucks for the plant. A belt conveyor is used to transfer the aggregates into the 100-cu. yd. plant bin. There is no steam for winter operation; grizzlies are used to keep out frozen lumps of aggregates. Portland cement is now received in sacks but it is planned to install a bulk handling system.

The blended aggregates are dis-

• An interior view at the plant, showing the mixer, two conveyors and the new block machine and offbearer (right).

• Left: Harry Kandzora, assistant general manager, and Ray Minette, general manager and treasurer.

• Right: The gas burner which is moved from room to room to provide curing heat.



charged by gravity into one hopper of the Kent Stediflo mixer which automatically maintains a constant head. Cement is now dumped from sacks into the other hopper. The feed of materials can be adjusted to any desired mixture and automatically maintained. An electric vibrator keeps the cement flowing from the hopper into a screw feeder to the mixer, which operates at a constant speed. All adjustments are made at the aggregate hopper, where a gate controls the rate of discharge on a belt feeder which also has a variable-speed reducer drive. The rate of water feed remains constant but can be adjusted as desired. A solenoid turns the flow of water on and off as the mixer is started or stopped.

The concrete is discharged from the mixer into a hopper over the two slat conveyors to the two block machines. Gates control the rate of feed to each conveyor and can shut it off entirely when one machine is down. One man controls this entire operation from feeding the materials into the mixer to the final conveyors.

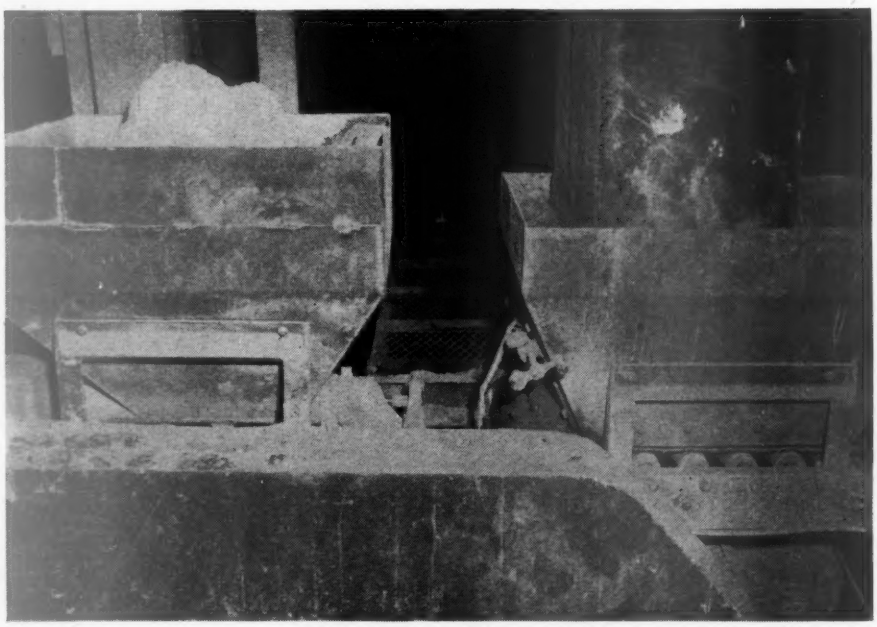
The Stearns Clipper Model A stripper block machine is now used mainly for making various extras and specials but can be used for any types of blocks. No modular blocks are made on this machine.

The new Lith-I-Block Type L5 machine is air- and oil-operated. The pallet rest is hydraulically operated; the stripper head and pallet feeder are operated by air. The mold box is vibrated by an eccentric. All operations are electrically controlled from a compact panel in an automatic cycle. The machine can be set for any speed between 2 and 4 cycles per min. This machine is so nearly vibrationless that no foundations are necessary. According to Mr. Minette, it is anchored only to keep it from shifting.

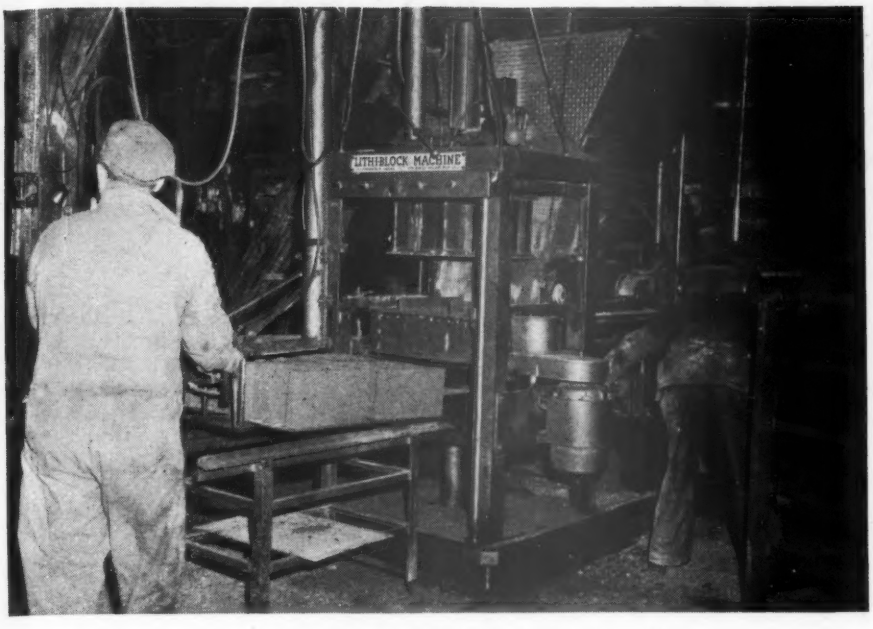
The feed drawer, a mechanically vibrated reciprocating feeder, deposits the concrete from the machine hopper over the entire form as it vibrates. The stripper head is automatically controlled but the operator can control the number of tamping blows for a harder block if desired. On automatic operation a red light shows when the blocks are the correct height, the tamping stops, and the stripping process begins. The pallet feeder pushes a fresh pallet in place, thus pushing the full pallet out on the offbearing table. The operator waits until two full pallets are ready and then transfers them both at once with the Lith-I-Block pneumatic offbearing hoist to the 60-block rack. Compressed air for all operations is supplied by an Ingersoll-Rand 3-cylinder radial air compressor.

The pallets used are steel plate 5/16 in. thick, 18½ in. wide and 26

• The discharge end of the continuous mixer, with conveyors to both block machines in the foreground.



• The feed end of the mixer, with the cement hopper (left) and the aggregate spout, hopper and feeder (right).



• Here the operator is inserting pallets (right) at the block machine.

• Another view of the new block machine, with the control panel box open.

in. long, and hold 3 standard modular blocks. They are automatically oiled as they pass out from the pallet feed compartment.

There are mold boxes for 4-, 6-, 8-, 10-, and 12-in. blocks, chimney blocks and all fractions and specials. A mold for concrete bricks will be added later. Mold changes can be made in 1½ hrs. or less. All blocks made on this machine have two cores, except for a double flush-end, 3-core, 8-in. unit which can be cut in half, and 4- and 6-in. blocks which are 3-core.

This machine operates best on a somewhat wetter mix than the stripper, so an intermediate mix is used which is workable in both machines. In spite of the fact that this mix is drier than desirable for the new machine, a clean and attractive block is made which weighs 38 to 40 lbs. for the 8-in. standard modular unit. An average strength of about 1400 lb. per square inch is obtained with a yield of 22 blocks per bag of cement.

An Automatic Transporter electric lift truck moves the loaded racks into the four curing rooms, which hold 26 racks each. The blocks are cured for 24 hrs. in these rooms, which are open at only their sheltered ends. Heat is provided by a Maxon gas burner mounted on a wheeled carriage so that it can be moved from one kiln to another. This heat, and water fog sprays keep the kiln temperatures at 140 to 150 deg. F. for 2½ to 3 hrs. They are then shut off and the blocks remain in the hot saturated rooms for the balance of the curing period.

The blocks are yarded from the kilns by a Handy Van gasoline lift truck. The yard capacity is about 200,000 blocks. Deliveries are made in company and customers' trucks for distances of 25 mi. or more. Most of the demand has been for home building but commercial demands are increasing.

In selling its products the company stresses quality and service and all jobs are followed up to check results. Company offiicals are aware that selling is again an important part of the block business. Advertising is done in local newspapers, and N.C.M.A. and P.C.A. literature is distributed.

Officers of the Berthelet Fuel & Supply Co. are as follows: Louis Fons Sr., president; John Vander Heyden, vice-president; I. R. Moland, secretary; Ray Minette, treasurer and general manager. Harry Kandzora is assistant general manager and Harvey Hansen is plant superintendent. Mr. Vander Heyden is also president of the Cities Fuel & Supply Co. of Milwaukee. Mr. Minette was with Cities Fuel for 10 years on both sales and production.

Business Looks Up in Southwest For Booming Concrete Trade

The concrete industry is booming in Oklahoma, where new plants and expansions of established concerns are reported. C. W. Price of Davis, has a new $10,000 concrete block plant under construction. The plant is being equipped with electric machinery.

Everett Morrow, operator of a concrete block business at Perry, has announced the purchase of a $30,000 ready-mix concrete plant in Leavenworth, Kan., which will be added to his business in Perry.

Universal Concrete Pipe Co. Honors Veteran Employees

Lapel service pins have been awarded to 21 long-time employees at 15 Universal Concrete Pipe Co. plants who have worked for more than 15 years. Winners of the lapel pins were announced recently in the company's house publication, *The Universal Circle.*

John Howell of the New Martinsville, W. Va., plant had the longest service record. His 25 years edged out Sam Heinzman of Columbus and Frank Emch of Binghamton, N. Y., both of whom had slightly in excess of 23 years.

Others honored included the following: 22 years—Ronald Dodds; 20 years—Mike Gladish, Steve Saminick, W. A. Schamp, Teddy Buck, Roy Cain, William Meuzsner, and Earl Yost; 19 years—Howard Crimmel; 18 years—Benny Mason, H. S. Rood, Huey McComas; 16 years—Pat Martin; 15 years—John Harris, Nelson Krenzer, Henry Wilkins, Cain Mixon, and Carl Schmidt.

Lewis C. Burd, 34, was killed when he apparently fell into a concrete mixer he was cleaning at the plant of the Bethlehem Block Co. at Bethlehem, Pa. R. H. Shoemaker, plant supervisor, said it was unknown how the machinery was set in motion. It is thought that the victim, who was working alone, may have fallen against a switch.

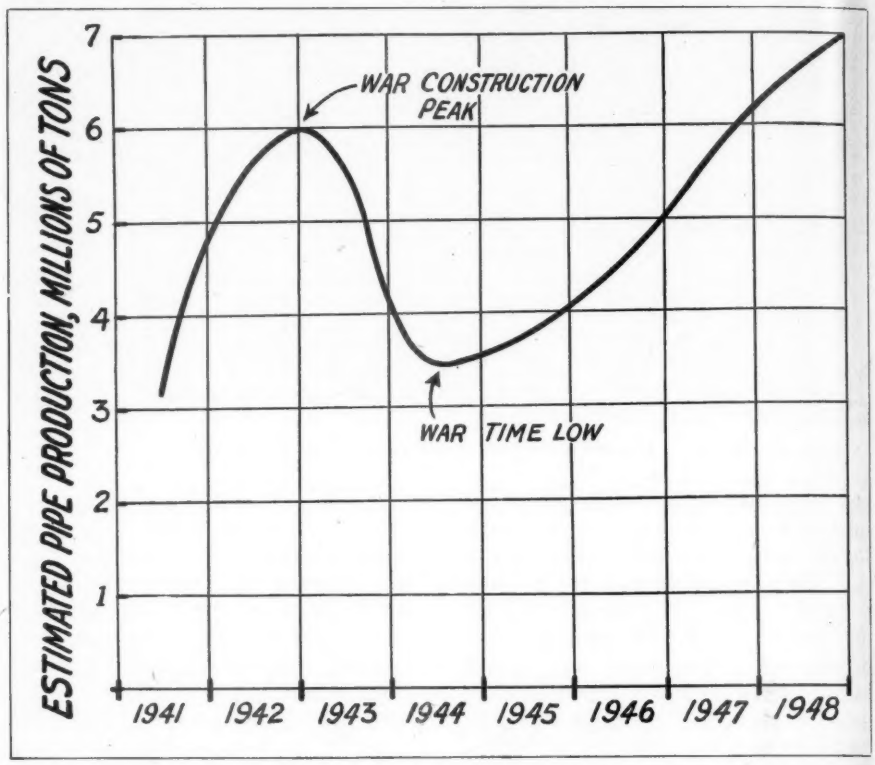
Edward P. Rush, president of the Rush Concrete Products Co., Arlington Heights, O., died unexpectedly on October 15. Mr. Rush suffered a fatal heart attack as he entered the door of the Kenwood Country Club. He founded the concrete products firm three years ago.

Concrete Pipe in 1948

Preliminary Reports Indicate Record Output Of 7,000,000 Tons—Up 16 Percent Over '47

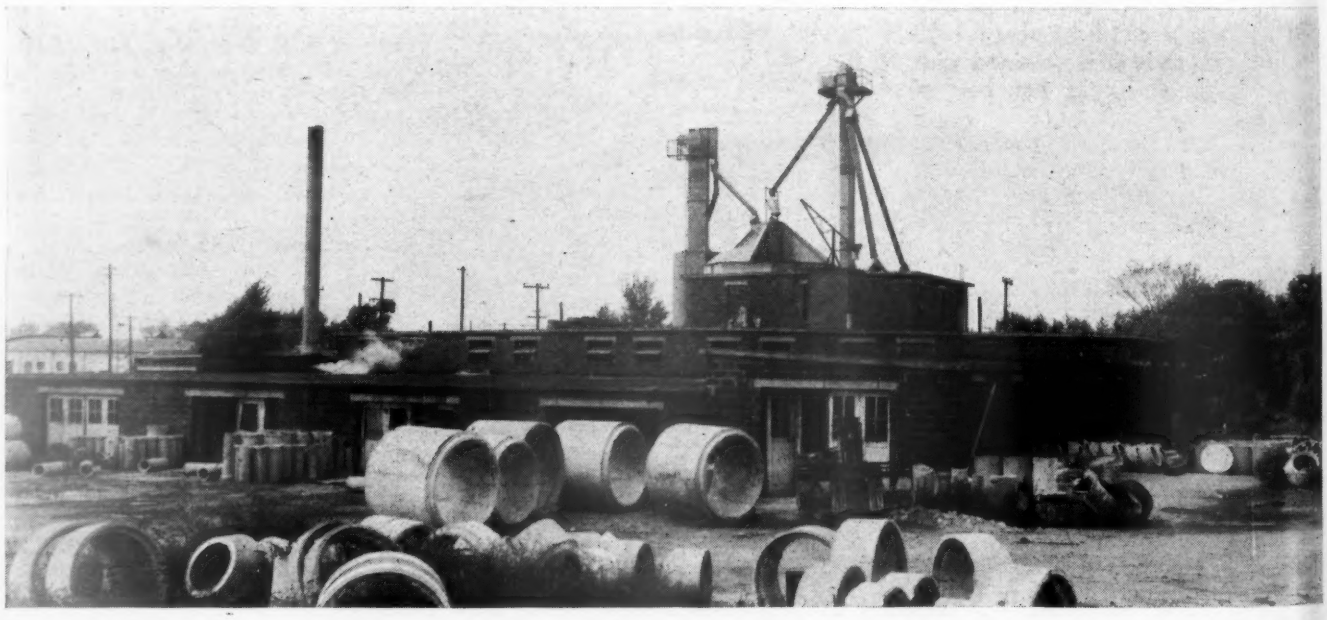
AS nearly as can be determined at present the 1948 production of all types of concrete pipe set a new record for the industry. In producing approximately 7,000,000 tons last year the concrete pipe industry surpassed its war construction performance in 1942 by a very comfortable margin, more than regaining all the ground lost in the almost toboggan-like skid which the production curve suffered in the latter years of the war (see graph). The output in 1948 was more than 16 percent greater than in 1937, and almost double the low point reached in 1944.

Most observers saw evidence in the closing weeks of 1948 that the production curve was leveling off. Although this was in some measure a result of limitations imposed by shortages of portland cement and reinforcing steel, there were other factors which suggested that 7,000,000 tons came pretty close to saturating the market. The significant fact, however, concerning 1948 production was that it represented the highest level in history at a time when public works comprised less than 25 percent of the dollar volume of all construction. Out of total construction of $17.7 billion in 1948, only $4.05 billion was in the public domain. In the past this would have meant only a so-so year for the concrete pipe industry, which normally has a tendency to languish when the national economy is running full tilt, and to perk up only when federal and local governmental spending are increased to counteract a slump in private spending.

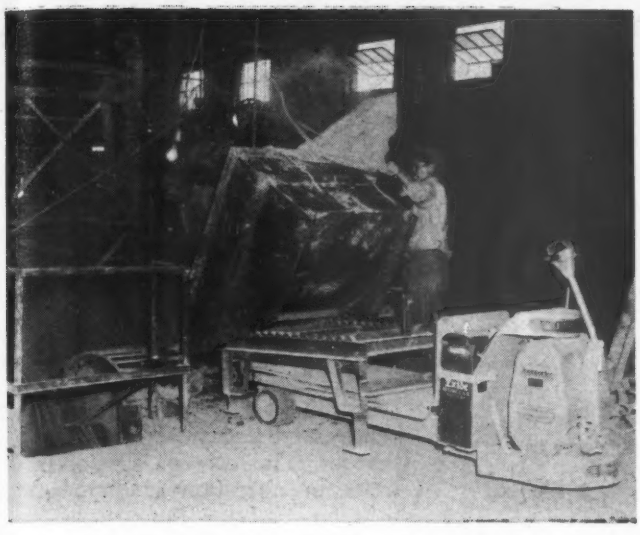


• Graph shows remarkable recovery made in production of all types of concrete pipe since the war. The curve is expected to level off considerably in 1949.

Increased output of concrete pipe in 1948 could undoubtedly, however, in some measure be traced to the increase in public spending over 1947—from $3.084 billion to $4.05 billion. The plain fact seemed to be that even in what amounted to a boom construction year, federal, state, county and municipal



• Most plants carried through improvement programs in 1948 in order to keep costs in line. Bins and elevators of this large Midwestern plant were installed to gain additional storage space, and to make available the economies possible when bulk cement is used.



• In one plant production was speeded up by feeding several machines from a single batcher with portable hoppers. By using two hoppers, batching delays were eliminated.

• Yard handling operations were speeded up by many producers with high speed power lift trucks of the type shown here. Pneuamtic tires are gaining in popularity.

governments were compelled to launch vast numbers of construction projects which directly affected the concrete pipe industry.

Various forecasts indicate that public spending in 1949 will be increased again, probably to around $5 billion, and the figure may be expected to go considerably higher in the event that private spending for construction takes a sudden dive. Thus, it seems entirely safe to predict that the concrete pipe industry will not lose any significant amount of production in 1949, and there could easily be some increase if the cement and steel supply situations ease sufficiently.

Based on an average mix of 8 sacks per cu. yd. of concrete, the 1948 output of concrete must have consumed close to 7,000,000 bbls. of portland cement, or almost 3½ percent of all cement produced in 1948. Probably because they are relatively small consumers, few producers of concrete pipe seemed to suffer unduly from the cement shortages which plagued other users in 1948. Relatively few plants actually had to shut down because of empty bins, and most producers managed somehow to meet their commitments. Some report, however, that they could have expanded their operations considerably during the year if adequate supplies of cement and reinforcing steel had been assured.

Similarly, the basing point decision which hit both the ready-mixed-concrete and concrete masonry unit industries with considerable impact,[1] it seemed to have relatively little effect on the concrete pipe industry. Although the average delivered price paid for cement increased somewhat, the competitive situation within the pipe industry was such that in practically all cases the producer was able to pass the increased cost on to his customers. Also helpful was the fact that so much of the industry's output is sold on a contract basis.

The year just closed saw the completion of several large pressure pipe installations, a field of application that was assuming vastly increased importance to the industry. Work was started during the year on a $10 million dollar pressure job at Denver, as well as on an important project for the Metropolitan Water District of San Francisco. One direct result of projects such as these, apart from their effect on production, was increased interest in centrifugal casting, particularly in the 12- to 90-in. diameter range. Although no figures are available on the proportion of 1948 production accounted for by the Prosser and Hume centrifugal processes, there was undoubtedly some gain over 1947.

So far as can be determined at present, there were relatively few new pipe plants built during 1948. But plant modernization and improvement programs were in evidence in every section of the country. For the most part efforts seemed to be directed at effecting further reductions in labor costs, one of the weaknesses highlighted by the industry's experience during the war. As a result of almost wholesale installations of labor saving equipment during the past two years, wheelbarrow and shovel methods are gradually disappearing from the scene, and pipe producers are making better products at more favorable costs than ever before. Qualitative improvements resulting from the employment of more accurate, controlled production techniques were undoubtedly an important factor in the pipe industry's excellent showing since the war, and there was good reason to believe that progress along these lines would be steady for some years to come.

There was considerable progress in 1948 along research lines. Preliminary data were published on a testing and research project started during the year at St. Anthony Falls Hydraulic Laboratory. Sponsored jointly by the American Concrete Pipe Association, the Portland Cement Association and the Highway Research Board, this program showed every promise of developing new flow data of vast importance to the concrete pipe industry. In the preliminary report values of Manning's "n", derived from full scale tests of 200-ft. long culverts, were .0103 for concrete pipe compared with .0231 for corrugated pipe. This is by a considerable margin the best coefficient ever established under rigid test conditions. The tests are being continued to cover a wider range of diameters and other variables.

There was increased interest in concrete pipe research in other quarters, too. Important work was being done by the Highway Research Board, the U. S. Army Engineer Corps. and Iowa State College. Because of the important

(*Continued on Page* 131)

[1]See Avery, William M.: *Survey Shows Impact of Cement Decision on Producers of Ready-Mix and Block*, PIT AND QUARRY, January 1949, page 211.

Ready-Mixed Concrete in 1948

Survey Returns Show Record Production of 25,000,000 Cu. Yds.—Up 20 Percent Over '47

By WILLIAM M. AVERY

ACCORDING to production data compiled from survey questionnaires received by PIT AND QUARRY in the closing weeks of 1948, the ready-mixed concrete industry last year produced over 25,000,000 cu. yds. of concrete, a new record for the industry and a thumping gain of 4,000,000 cu. yds. over 1947. Since the figures are based on a sample comprising only about 8 percent of 1947's output of 21,000,000 cu. yds., there is a distinct possibility that the showing is overly optimistic, but it seems highly unlikely that the gain in production over 1947 was much less than 20 percent. Broken down on a geographical basis, the reported gains were surprisingly uniform. The West and East showed the largest jumps (29 and 27 per cent respectively), and both the Midwest and the South were well above 15 percent.

Since the total volume of concrete construction in 1948 showed no such spectacular gain over 1947, one clear interpretation of the jump in ready-mix output was that this important material was accounting for an increasingly large share of total concrete construction volume—a trend which has been pointed out in these pages several times in recent years. In our ready-mix review of a year ago we pointed out that almost 14 percent of all cement produced in 1947 was marketed as ready-mixed concrete. It seems likely that in the year just closed the proportion was at least 16 percent, despite a jump of more than 10 percent in cement production, and even with this showing the field was far from the saturation point. Most authorities agree that commercial ready-mixed concrete can be used advantageously in at least 60 percent of all construction work involving concrete.

The number of mixer trucks in the industry increased almost 10 percent during 1948, and truck capacity was up approximately 12 percent over 1947. Most sections of the country were fairly close to the average in this respect, except for the West, where the number of trucks showed an increase of 25 percent, and the capacity jumped 27.5 percent. The average size of mixer truck in operation increased from 3.46 cu. yds. on January 1, 1948, to 3.54 cu. yds. on November 15.

The ready-mixed concrete industry seemed less seriously affected by cement shortages in 1948 than other users of the material. Data compiled from the questionnaires suggest that 1948 production might have been about 5½ percent higher, if sufficient cement had been available throughout the year. This was probably no greater than the loss experienced in 1947. The Midwest showed the greatest curtailment (over 12 percent), while the South was least, with 2.5 percent. All sections reported considerably higher prices paid for portland cement after midyear, when the Supreme Court order in the basing point case

• One of the many ready-mixed concrete plants completed during 1948 in the South.

became effective. The average cost increase reported by all producers was 21 cents per bbl. In the West, East, South and Midwest the increases averaged 32, 27, 25 and 16 cents, respectively. The various average costs are shown in the following table:

The average base selling price of ready-mixed concrete showed an increase during 1948, due, at least in part, to the increase in cost of cement. For the entire country it jumped from $10.23 per cu. yd. on January 1 to $10.89 per cu. yd. on November 15—an increase of 66 cents per cu. yd. Based on an average cement content of 5 sacks per cu. yd., about 26 cents of this increase was directly accounted for by the increase in the cost of cement. Comparative figures for the various sections of the country are shown in the following table:

Locality	Average Cost/Bbl.		Increase
	July 1	Nov. 15	
East	$2.81	$3.08	$0.27
Midwest	2.77	2.93	.16
West	3.43	3.75	.32
South	3.13	3.38	.25
Average	3.01	3.22	.21

Locality	Average S.P./Cu. Yd.		Increase
	Jan. 1	Nov. 15	
East	$ 9.82	$10.52	$0.70
Midwest	9.98	10.62	.64
West	9.81	10.33	.52
South	10.97	11.68	.71
Average	10.23	10.89	.66

Undoubtedly the industry's rather favorable experience with cement during recent months was largely due to the extent to which producers have converted their plants to bulk handling in recent years. Although bulk handling has by no means provided absolute assurance of deliveries, experience in all sections of the country indicates that the bulk user is better off than the bag user. If all else fails, he can always manage to operate somehow with bagged cement, whereas the bag user is stymied when his supplier offers a carload of bulk cement. Another important factor was the increasingly large percentage of all portland cement shipments going to ready-mixed concrete plants.

The industry was inclined to be optimistic about its prospects in 1949. Sixty percent of our informants expect their volume of business to show another increase, while the remainder either look for operations to continue at the 1948 level or frankly admit that they don't know what to expect. The increases predicted are probably not particularly significant, but they ranged in general from 5 to 30 percent, with 15 percent representing a fair average. About 40 percent of the replies disclosed definite plans for adding to present truck fleets. The average increase for all the reporting companies was just over 6 cu. yds. If this is fairly representative of what the entire industry will do in 1949, the truck mixer manufacturers should have their hands full.

A fair number of entirely new ready-mixed concrete plants were built during the past year, but far more activity was noted in expansion and improvement programs. By the end of 1948 the industry had in general made up for the enforced neglect through the war years, and plants were in far better shape, and able to operate far more efficiently, than at any time since 1942, when they took a royal shellacking in the process of turning out 24,000,000 cu. yds. of material. The vastly improved truck supply situation made it relatively easy to replace over-age equipment. Price was still something of a barrier, but most operators seemed to be jerking ancient, inefficient units out of service as rapidly as possible. PIT AND QUARRY's survey indicated that the average plant now operates between 10 and 11 trucks.

The use of non-agitating equipment showed further gains during 1948. In general the expansion of operations of this type seemed not to be at the expense of existing transit-mix capacity, notwithstanding claims made by some proponents of the practice. Central-mixed, air-entrained concrete undoubtedly was finding acceptance in many places, but it clearly had not revolutionized the ready-mixed concrete industry. Probably its most startling achievement was to bring ready-mixed concrete into the Chicago area after the unions had effectively blocked the use of transit-mix trucks.

The year just closed was certainly a prosperous one for the ready-mixed concrete industry, and there was every indication in the opening weeks of 1949 that prosperity would continue. A mild recession such as the wiseacres were predicting could hardly do the industry any serious harm. Its entire development, after all, has been soundly predicated on quality, convenience and economy. So long as concrete is used, ready-mixed producers stand to get a generous share of the volume, and its proportion of the total should logically increase under the impact of any belt tightening in the near future.

Concrete Pipe in 1948

(*From page* 129)

strides the industry has made in improving the quality of its products, it stands to benefit from these and other efforts to bring design factors up to data. For example, the improved "n" coefficients found in the tests under Dr. Lorenz G. Straub at the University of Minnesota are definitely attributable to the smooth surfaces, close dimensional tolerances and almost perfect concentricity of modern concrete pipe as compared with specimens tested some 20 years ago.

At their fortieth annual convention held in New Orleans on March 11, 12 and 13, members of the American Concrete Pipe Association evinced their growing interest in problems related to research and sales promotion. Under the leadership of their capable managing director, Howard F. Peckworth, the association was playing an increasingly important role in all problems directly affecting the industry, with particular emphasis on research, production and sales. There were definite plans for making these vitally important subjects the keynote of the 1949 annual convention, scheduled at the John Marshall Hotel, Richmond, Va., March 11 and 12.

In discussing the prospects of the industry just a year ago, PIT AND QUARRY had this to say: "The pipe industry faced the new year with considerable assurance; its house, by and large, was in good order, and there was every possibility that total volume in 1948 might soar as high as 7,000,000 tons. If the widely predicted slump came during the year, it was virtually certain that public works would quickly take up the slack."

In the early weeks of another new year, this still seems a fair appraisal of future prospects.

W. O. Homer, head of the Homer Ready-Mix Concrete Company of Junction City, Kan., recently announced that the firm's $45,000 plant is ready for production. The company will make deliveries in transit-mix trucks to users within operating distance of the plant.

More than $100,000 has been spent in remodeling the Pleasant Grove, Utah, plant of the United Concrete Pipe Co. The firm has the contract for furnishing pipe for a 7½-mile section of the Salt Lake aqueduct.

"Just Add Water"

New Sakrete Unit Now Producing at Franklin Park, Ill.

By WILLIAM M. AVERY

another ON THE SPOT report

AN important new unit in the network of plants for the production and distribution of Sakrete went into operation at Franklin Park, Illinois, several months ago. The new concern is the Dry-Mix Concrete Co., Inc., which is licensed by Sakrete, Inc., to sell the product in northern Illinois, northern Indiana and western Michigan. Ground was broken for the plant in December, 1947 and the first material was turned out on August 28, 1948.

The plant, located on 52,000 sq. ft. of ground not far from the Franklin Park plant of Illinois Brick Co., represents an investment of approximately $60,000 which is almost equally divided between building and machinery. In the main it could be mistaken for a conventional drying and batching plant, but its most important facilities are those which carry out, within very narrow margins of accuracy, the blending process on which the Sakrete patents are based. Every effort was made to incorporate in the design all the know-how accumulated in Sakrete operations at other localities during the past twelve years. In consequence, the Dry-Mix plant very probably represents, at least for the present, the last word in Sakrete plant design.

Sakrete is the end product, an idea conceived by Arthur C. Avril back in 1934, when he owned and operated a central-mix plant at Cincinnati under the name of Tru-Batch Concrete, Inc. Mr. Avril felt that conventional ready-mixed concrete, regardless of the method of delivery, was inadequate for the needs of the very small user, whose requirements might range from a hatful to as much as half a cubic yard. Users in that category, largely home owners, either delegated their work to contractors at considerable expense, or bought the component materials and attempted to proportion and mix their own concrete. In the latter case results were likely to be poor, and the user more often than not chalked up the failure to the materials rather than to his own lack of knowledge and experience in handling them.

Mr. Avril felt that anyone who periodically needed such small quantities of concrete would welcome the opportunity to purchase the materials, correctly proportioned and mixed, and delivered in moisture-proof bags that could conveniently and safely be stored and handled on his own premises. In short, the basic idea was to merchandise materials to which the user would need simply to add water and mix briefly in order to produce concrete which would at least equal, in uniformity, strength and other characteristics, the very best materials used on large construction projects.

• William E. Mussett is president of the new company.

• A general view of the new plant of Dry-Mix Concrete Co., Inc., Franklin Park, Ill. Of the two batching units for which the 75-by 100-ft. building was designed, one is now in operation.

Experimental and development work covered a span of more than 2 years, and it was July, 1936, before the first bag of Sakrete was produced in Mr. Avril's Cincinnati plant. (See PIT AND QUARRY, March, 1938, pp. 73-74 for a complete description.) Various methods were tried and rejected before a practical procedure was developed which would insure accurate batching of the materials in such small quantities. The feature on which patents were finally issued in 1939 involves a method for proportioning materials in each sack individually. This is still the basic principle in the production of Sakrete, although in the intervening years many improvements have been developed and patented to simplify mechanical features of the process in the interests of economy and efficiency.

Largely as a result of this refinement process, the new plant at Franklin Park would seem deceptively simple to a casual observer. A rail siding, built by the company, serves for both incoming shipments of aggregate and cement and outgoing shipments of Sakrete. A double undertrack hopper, with a belt conveyor on one side and a screw on the other, feeds the two basic raw materials

• This exterior view of the plant under construction shows the arrangement of storage and handling facilities with respect to the gas-fired rotary dryer. The reclaiming tunnel (left) consists of four sections of 4-ft. diameter reinforced concrete pipe.

• A view of the plant taken after the construction work was completed shows the feed and discharge ends of the rotary dryer completely housed. Bulk cement is stored in the bin on the left.

to bucket elevators located adjacent to the siding and just clear of the plant building. The aggregate elevator can discharge directly into the rotary dryer or onto an outside storage pile located over a recovery tunnel. In this rather unique setup a tunnel was constructed by butting together four lengths of 4-ft. diameter reinforced concrete pipe. Recovery is accomplished by feeding through manually operated gates onto an 18-in. belt conveyor which discharges into the boot of the aggregate elevator. A concrete block retaining wall between the tunnel and the rail siding results in a live storage capacity of about 25 tons, and a ramp approach from the opposite side makes is possible to store trucked-in aggregates without operating the elevator.

Although at present the plant is being fed with bagged cement, a 600-bbl. bulk cement bin is already under construction. An auxiliary cement elevator, incorporated in the design in anticipation of ultimately producing a mortar mix product, is currently used for feeding standard bagged cement into the batching hopper from inside the building. In this, and in other phases of the design, the widest possible flexibility was sought to permit switching from one product to another with the minimum delay.

In the production of Sakrete one of the prime requisites is that all interior and exterior moisture be removed from the aggregates before they are batched. At the plant in Franklin Park this is accomplished with a gas-fired rotary dryer which measures 3 ft. in diameter by 39 ft. in length. It is claimed that 99.8 percent of all moisture in the materials is removed when they are discharged from the dryer. The dried material is elevated and discharged onto a vibrating screen which separates it into the desired size fractions. The batching equipment is fed by gravity from an overhead 100-ton steel bin.

Up to the point of bagging the finished product, the batching and mixing operations are controlled entirely by push buttons. The system is so interlocked with modern electronic controls that it is virtually impossible to underweigh or double-charge a batch. On a 90-lb. batch it is said that the weight of the component materials is accurate within 0.25 of one percent. The patented process for individually proportioning and mixing the contents of each sack of Sakrete, assures an end product which has the uniform workability essential for inexperienced users. The mix design is based on 4,000 p.s.i. at 28 days for the coarse aggregate material, and 5,000 p.s.i. for the sand mix, provided the prescribed amount of water (plainly printed on the bags) is used. Since the materials are graded just ahead of the batcher, with no intermediate handling which might cause segregation, the batches are remarkably uniform, and there is very little variation in strength and other properties of the concrete produced.

• The 4-ply bags are taped and machine-sewed to insure against any moisture pick-up in storage. Eight 90-lb. bags are easily handled on small wood pallet with the double-tilt hand truck in the foreground.

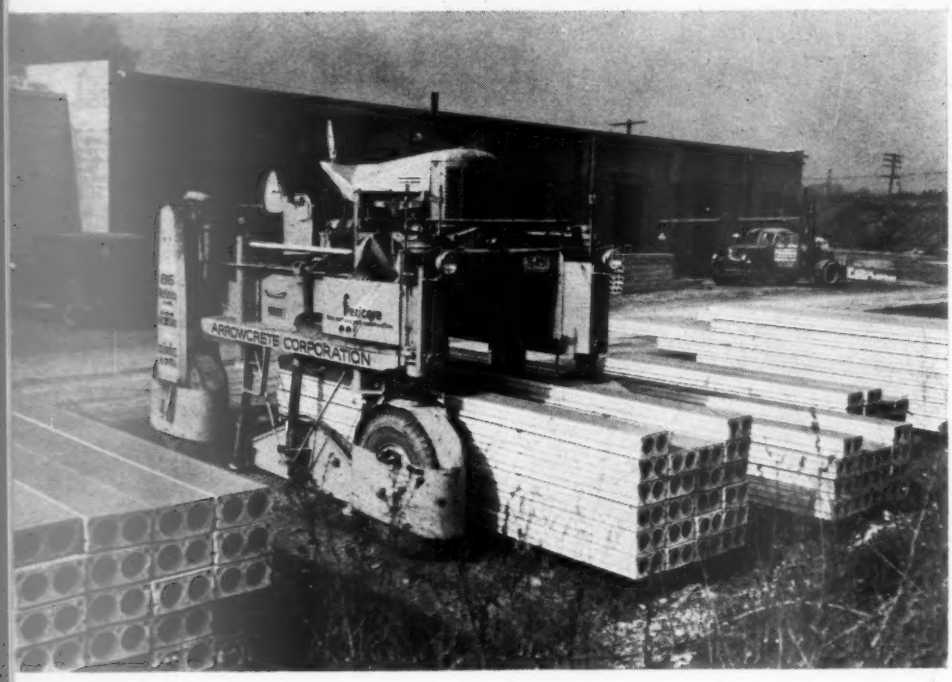
Sakrete is packed in moisture-proofed paper bags, machine stitched and taped at both ends to give maximum protection against the encroachment of atmospheric moisture. Under moderately good storage conditions the material may be kept indefinitely without loss due to hardening. Test batches produced at the Avril plant in Cincinnati 12 years ago are still perfectly usable today.

The four standard Sakrete products are being produced at the Dry-Mix plant. The concrete mix, incorporating coarse aggregate up to 1 in., is packed in 45- and 90-lb. bags. It is recommended for patching concrete sidewalks and

(*Continued on page* 136)

Columbu
Promote
Wall Co

Stephen Stepanian, president of the Arrowcrete Corp., has designed a pressed-steel channel which easily adapts Flexicore slabs to wall construction.



• At the Arrowcrete Corporation's plant at Columbus, O., both job delivery and yard movement of the slabs are handled with this one leviathan straddle truck. On the open road this machine will carry 10 tons of slabs at speeds ranging up to 35 m.p.h. In the right background is the small truck-mounted hyraulic crane used to erect Flexicore panels.

another ON THE SPOT report

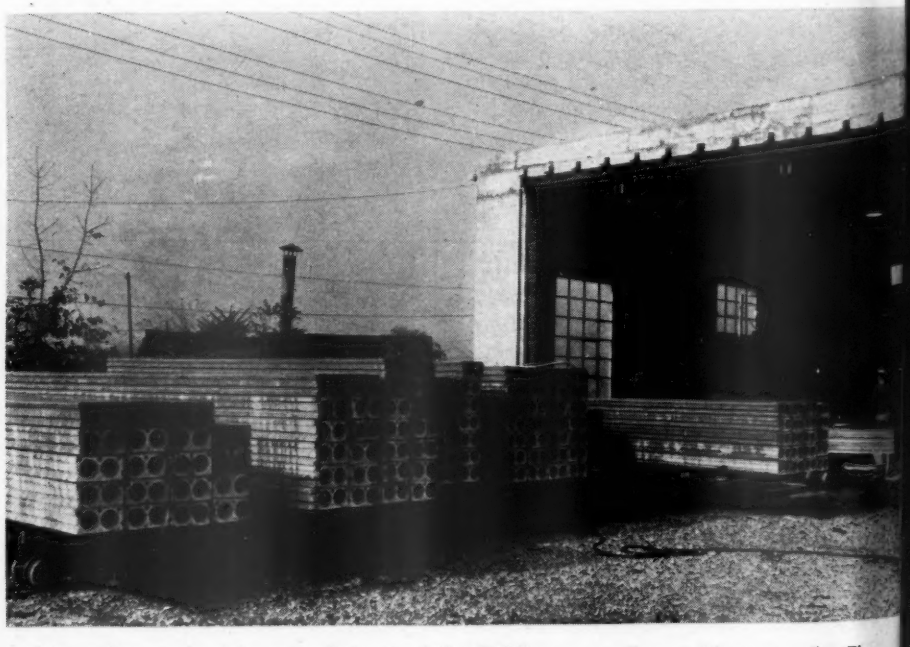
THERE is little doubt that the cost of building is too high today, at least for most would-be home owners or small industrialists. In an effort to curb spiraling building costs, or at least to level them out, construction men everywhere are continually searching for better and cheaper building materials with attendant cheaper and better methods of erection. A number of builders have found that a partial solution to this problem can be effected with Flexicore floor and roof slabs, a patented trade name given to a precast, precured, hollow-cast concrete slab with prestressed-steel reinforcing. Manufactured in standard cross sections in lengths up to 22 ft. 6 in., these slabs, when laid and grouted together, form a single flat slab only 6 in. thick.

By EDWARD BRUNENKANT

We discussed the subject of building costs recently with Stephen Stepanian, president of Arrowcrete Corp., Columbus, O., newest and probably the most modern of the Price Brothers' rapidly growing chain of Flexicore licensees. "No other building material," he said, "so effectively eliminates high-priced labor and expensive materials as Flexicore slabs."

Steve Stepanian has thrown himself into the Flexicore business with all of the inventiveness and enthusiasm that characterized his activities in the ready-mixed concrete industry. As a natural consequence of his ingenuity, the new Arrowcrete plant is a model which

• Left: Justifiably proud of their new plant are Stephan Stepanian, president; L. C. Winterrowd, superintendent; W. R. King, office manager; and C. E. Haines, general manager and secretary-treasurer.



• Above: The green slabs are rolled out of the building on small cars riding on rails. The straddle truck will then pick them up for delivery or for storage elsewhere in the yard.

Operator Flexicore Construction

• An interior shot of the new Arrowcrete Flexicore plant. The workman on the mezzanine floor, which serves as the roof of the curing room, welds together the rod-and-wire reinforcing.

future Flexicore manufacturers might well emulate. Of greater importance to the whole building industry, as well as other Flexicore manufacturers, however, is Mr. Stepanian's scheme for adapting Flexicore slabs to wall construction.

With the use of Mr. Stepanian's specially designed pressed-steel channels which simultaneously act as guides for holding and aligning the slabs and load-bearing columns, the advantages inherent in Flexicore construction can easily be adapted to walls. To show the effectiveness and adaptability of this method of wall erection, Mr. Stepanian has built a small pilot building using no other material but Flexicore slabs (see illustration).

At the new Arrowcrete plant, which is 120 ft. long by 80 ft. in width, the slabs are manufactured on an endless production system patterned somewhat after that used in the Price Brothers' plant in Dayton. After the forms have been stripped on the pier tables set in front of the discharge end of the curing room, they are conveyed through the cleaning, oiling, and reassembly stations on an interlocking system of roller conveyors.

The two side forms, consisting of 6-in. steel channels, are then clamped together with steel end bulkheads. The latter are perforated so as to admit and align the reinforcing bars and the special 4⅝-in. diameter Flexicore rubber tubes which are installed at the next station. The bottom of the form consists of a removable steel plate which shapes the inside or smooth ceiling surface.

A torque wrench is used to pre-

•An all-Flexicore building. The employment of Mr. Stepanian's special pressed-steel channels, previously utilized exclusively for floors, is likely to extend the use of Flexicore slabs to wall construction.

• Below: All concrete for the Flexicore operations is supplied by transit mixers.

• The transit-mix truck discharges directly into this 2-cu. yd. hopper, fitted with a distributing panel.

stress the reinforcing bars which are threaded at the ends for this purpose. Prestressing definitely controls the shape of the slab during curing, eliminating any shrinkage cracks and materially reducing deflection. The number and the diameter of the reinforcing rods varies according to the overall length of the slab and the load requirements of the job.

The two circular cores, which constitute approximately 50 percent of the cross sectional area of the finished slab, are formed by two heavy-duty rubber tubes. Special yokes, clamped at regular intervals to the side channel plates, hold these tubes in position while the form is being vibrated.

At the Arrowcrete plant, all of the concrete used in the manufacture of slabs is supplied by the ultra modern Arrow Sand & Gravel ready-mixed concrete plan (See PIT AND QUARRY, Sept. '47; page 160), which is located on adjacent property. By utilizing the facilities of an up-to-date ready-mix plant, Mr. Stepanian has an assured supply of quality concrete on tap for use in the event of sudden need. At present all slabs are poured with a 5000-lb. concrete, using a 7-bag mix with the addition of small amounts of calcium chlorides.

When the forms are ready to be poured, one of the transit mixers backs up a dirt ramp and discharges a load of concrete into a chute feeding a 2-cu. yd. Jaeger hopper inside the building. This hopper is fitted with a distributing apron to ease the work of the men shoveling the concrete into the forms.

Experience at this plant has indicated that shoveling the concrete into the forms produces a denser and more uniform concrete slab than is obtained by mechanical methods of loading.

The concrete is compacted on three vibrating piers spaced at 6 ft. intervals. Each vibrating pier is a complete unit within itself and each can be switched on or off independently of the others.

When the form is filled and the concrete thoroughly compacted, the unit is lifted off the vibrating piers by means of a small overhead electric hoist and loaded on a specially built kiln car which holds 20 slabs —four across and five high. A 4- by 4-in. beam is placed between the rows of slabs so as to permit free circulation of the steam and hot air during curing.

The slabs are cured overnight with a live steam-and-heat cure at temperatures ranging up to 120 deg. F. Around midnight, the watchman deflates the core tubes, which are pulled out the following morning. Early deflation of the tubes eliminates any serious danger of cohesion between the setting concrete and the Flexicore tubes.

Three sides of the curing room are closed in with canvas, the fourth side being the plant wall. Although the three canvas sides undoubtedly allow some heat to escape, the convenience inherent to the repeated raising and lowering of this type of closure far outweighs any cost attributable to heat loss.

The freshly stripped slabs are loaded on rail cars similar (but smaller) to the kiln trucks and pushed into the yard through a big door in the front of the building while the knocked-down forms are returned to the cleaning, oiling, and reassembly cycles. At the Arrowcrete plant, all outside handling of the slabs is done with a Ross Carrier straddle truck widely used, heretofore, for handling lumber. This is one of the first such units to be used by any Flexicore manufacturer. For a recent delivery, this machine carried nearly 10 tons of 500 sq. ft. precast slabs 55 miles at speeds ranging up to 35 m. p. h.

While we were in Columbus we followed this straddle truck to a small industrial construction project where it placed its load of Flexicore slabs adjacent to building project. Here a three-man Arrowcrete erection crew lifted and placed approximately 650 sq. ft. of roof—not a mean feat considering that this performance was entirely unrehearsed and was accomplished without scaffolding. The slabs were elevated from the ground to the one story level with a Milwaukee-Hydraulic crane mounted on a small Chevrolet truck.

At the present time the Arrowcrete plant is turning out about 1000 linear ft. of Flexicore a day, but as the working force becomes more thoroughly familiar with their jobs, output is expected to exceed 2000 ft. per day.

Associated with Mr. Stepanian in the Arrowcrete enterprise are L. C. Winterrowd, plant superintendent; W. R. King, office manager; and C. E. Haines, general manager and secretary-treasurer. All four men are experienced in concrete and concrete products techniques.

"Just Add Water"

(*From page* 133)

floors, making small foundations for machinery and footings, and innumerable similar applications. The 90-lb. bag will cover 8 sq. ft. to a depth of one in., or 2/3 of a cu. ft.

Sand mix, recommended for plastering stone or concrete walls, patching cracks or pointing, is packed in 11-, 45-, and 80-lb. bags. The large bag will cover 16 sq. ft. ½ in. thick. Sakrete Water Tite produces a waterproofed cement grout for repairing leaks in masonry walls and tanks. Both these products and Sakrete Mortar Mix (for laying brick, concrete block, tile or field stone) are packed in 45- and 80-lb. bags. By providing several bag sizes for each of the products maximum convenience and minimum waste are assured for all who use the materials.

The Dry-Mix plant building is 75 ft. wide by 100 ft. deep, providing adequate space for warehousing both the finished products and the bagged materials used in their production. At the packing station eight 90-lb. sacks are loaded onto an Avril Twin-Tilt hand truck for transporting palletized loads to the storage section of the building.

At present only one batching unit is in operation, but full provision, including all necessary foundations, has been made for the installation of a second unit within the present building. Productive capacity of a Sakrete batching unit is approximately 30,000 90-lb. bags per month. A reasonable shipping radius for the products is considered, under normal conditions, to be around 125 miles from the producing plant, although there are many instances of much greater movement to reach the ultimate user.

Dry-Mix is actually serving the twenty-first territory under license by Sakrete. Other producers are Harry T. Campbell Sons Corp., Towson, Md., who operate three units serving ten territories; W. R. Bonsal Co., Inc., who operates a new plant at Lilesville, N. C. serving seven territories; Associated Products Corp., Los Angeles, which serves the 10 southern counties of California; and The Atlas Lime Company of El Paso, Texas serving west Texas and New Mexico. In addition to these licenses, Sakrete, Inc., owned and operated by Art Avril, started operations several months ago in a new double-unit plant at Cincinnati. Territories in other sections of the country are now under negotiations.

Wherever it has appeared, Sakrete has been welcomed enthusiastically

(*Continued on page* 138)

The Design of Concrete Block Mixes

By LEO C. JENSEN
Plant Manager
Layrite Concrete Products Co.
Spokane, Washington

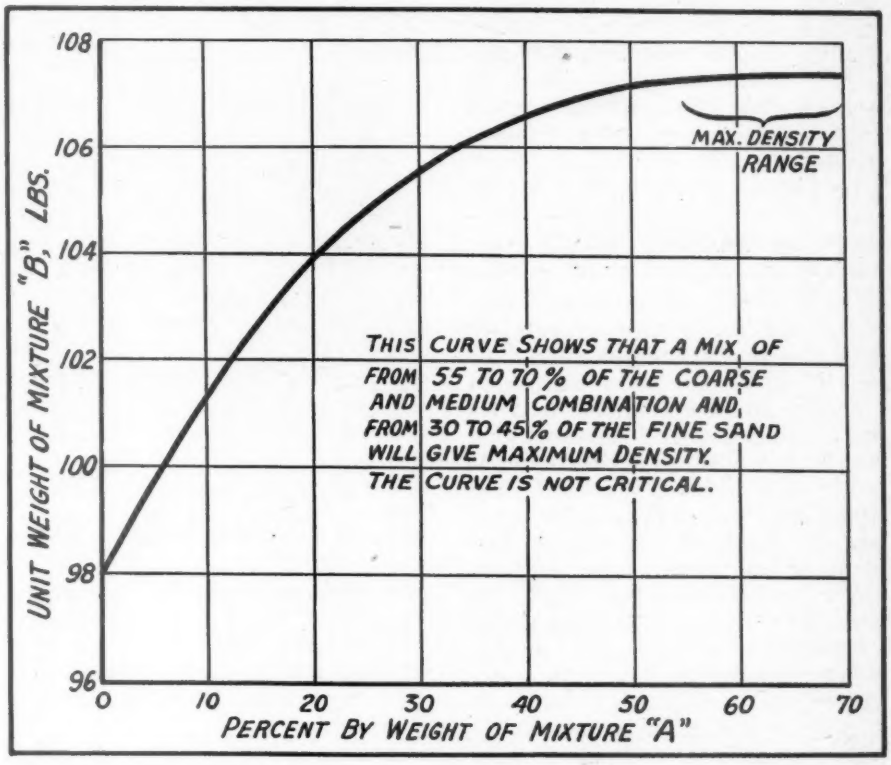
another P-Q exclusive

ONE of the most vital problems in the concrete block industry today is the design and control of the concrete mix. Many block manufacturers may realize a far greater yield of blocks per sack of cement by the proper selection and proportioning of the various-sized aggregates.

The problem is, in the majority of cases, an individual one pertaining to one particular manufacturer. That is, while one particular gradation range is very suitable in one locality, it is not suitable in another due to variations in curing processes, manufacturing processes and texture, green strength, density, absorptivity and ultimate strength requirements. It is a mistake to assume that a saleable product in one area is necessarily a saleable product in another area.

In the design of a mix the manufacturer may never reach an ideal gradation because he must utilize the raw materials at hand, rather than incur the added expense of shipping a certain particularly-graded material any great distance to his plant. The manufacturer can, however, get the maximum use out of the particular materials he has at hand by following certain fundamental tests.

Theoretically, maximum density is the point to work toward; that is, a combination of particles that gives the most weight in a given volume. As an illustration, suppose you have one cubic foot of coarse aggregate (¼- to ⅜-in.) dry rodded in place in a container. Upon weighing the aggregate, for example, you find that the contents total 92.0 lbs. A certain percentage of this volume is air due to the voids created by the contact of the particles. The addition of a finer aggregate (No. 28 sieve to ¼ in.) can be rodded into this one-cubic foot volume to fill the voids of the larger particles. The one-cubic foot volume is still retained, but the weight is now increased to 100 lbs. This finer aggregate creates many more voids than the coarse, but they are much smaller. The addition now of a fine sand (minus No. 100 sieve to No. 28 sieve) dry rodded into this same volume will increase the unit weight again, say to 105 lbs. This is one complete test, using certain percentages of three sizes of aggregates. This should be repeated exhaustively using various percentages until a maximum weight is reached. Detailed procedure in following this method is shown in the following table:



Part I								
Percentage by weight, coarse	0	10	20	30	40	50	60	70
Percentage by weight, medium	100	90	80	70	60	50	40	30
Unit weight of mixture "A"	..	..	..	..	..	..	..	..
Part II								
Percentage by weight of mixture "A" giving greatest weight	0	10	20	30	40	50	60	70
Percentage by weight, fine	100	90	80	70	60	50	40	30
Unit weight of mixture "B"	..	..	..	..	..	..	..	..

Plot the results of Part II with percent of mixture "A" as abscissa and unit weight of mixture "B" as ordinate and draw a representative curve through the plotted points. The percentage of mixture "A" giving the highest unit weight will be readily apparent and the shape of the curve will indicate whether the percentage is critical.

If the manufacturer has at hand a considerable choice of aggregate sizes, the following gradation should give very good results:

Sieve	*Percentage Retained Cumulative*
⅜	0
4	20-25
8	40-45
14	55-60
28	70-75
48	85-90
100	95-100

As a general rule it is desirable to have from 20 to 25 percent on the No. 4 sieve and at least 10 percent through the No. 48 from the standpoint of workability of the mix and minimizing breakage of the freshly molded block.

It is suggested that each product manufacturer make sieve analyses of his aggregates, and, with the suggestions mentioned as guides, determine the best possible product he can manufacture with the materials he has available.

Graham Webb, President of Kentucky Firms, Succumbs

Graham Webb, president of the Middle States Bituminous Company and the Middle States Concrete Co. of Ashland, Ky., died on October 11 at his home in that city after an illness of several days.

Mr. Webb was a past president and director of the Kentucky Plant Mix Asphalt Industry and a director of the Kentucky Highway Contractors Assn.

Pioneer California Manufacturers of Irrigation Pipe Modernize Equipment

ON THE SPOT Report

CONCRETE pipe for irrigation lines came into general use on California ranches around the turn of the century when growers began to realize that open, unlined ditches were wasting too much of their precious water.

A pioneer producer of this pipe

By HARRY F. UTLEY

is F. J. Moran, still active as a concrete-pipe maker after nearly 40 years in the business, although he has now relinquished management detail to his son, Don, the firm today operating as F. J. Moran & Son at Ontario, Calif. Original Moran-made pipe, which is still conducting water to thousands of acres of orange and lemon groves and produce gardens in southern California, was made by hand-tamping. About 20 years ago, a packer-head type machine was installed and this equipment remained in service until recently after turning out thousands of miles of irrigation pipe.

Early in 1948, the old machine was scrapped and in its place the Morans installed a new Martin Model 48 packer-head machine. The Model 48 is, in many basic respects, similar to the old equipment which had served so long and so faithfully but incorporates numerous improvements and modern refinements. It is the latest model to come from the Martin shops and

• The new packer-head pipe machine soon after it went into operation at the Moran plant.

• A view of one end of the concrete pipe plant operated by F. J. Moran & Son at Ontario, Calif. At the left is the pipe machine; at the right, the mixer and batcher.

the Morans are now reaping the benefit of these developments, especially with regard to higher production speed and improved quality and appearance of the finished product.

Output at the Moran yard is confined exclusively to tongue-and-groove irrigation pipe and the new equipment produces this in 4- to 24-in. diameters in sections 36 in. long, and as fast as two completed sections per minute. The motor on the machine stores energy by use of a heavy flywheel to provide a uniform packing and troweling action. Controls are hydraulic and finger-tip operated, accounting in part for the high capacity being attained, the Morans point out. High speed of the packer-head (326 r.p.m.) is used when making the small sizes, 4 and 6 in.; an intermediate speed (244 r.p.m.) is used for 8- to 12-in. diameter pipe; and the low speed (116 r.p.m.) when 14- to 24-in. sections are being manufactured.

A relatively dry, high-strength concrete mix is used, prepared in a 9-cu. ft. Blystone paddle-type mixer and carried to the machine hopper by a short, cleated conveyor. Conventional pipe carts carry the jacketed sections to the yard. Curing is done in the open since the temperature seldom drops to the freezing mark and a thorough plan of sprinkling is carried on during curing. When ready for shipment, it is loaded on International truck-trailer or flat-bed trucks by a Hyster "Space Saver" power-operated fork-lift truck. Both regular and double-strength pipe are produced to meet A.S.T.M. (0118-39) standards. Both hydraulic and 3-edge-bearing tests are made at regular intervals right in the yard on testing equipment designed to company specifications.

Concrete irrigation lines are designed to operate under normal heads up to 25 ft., depending upon pipe diameter; however, the Morans are proud of the extreme factor of safety provided by their product and guarantee that, in the smaller sizes, the pipe will regularly withstand 100 ft.

As is the general custom in the California concrete-pipe industry, the company also contracts and lays the lines. Its working force numbers about 20 men, 8 of whom work at the Ontario plant and 12 on deliveries and field laying operations.

"Just Add Water"

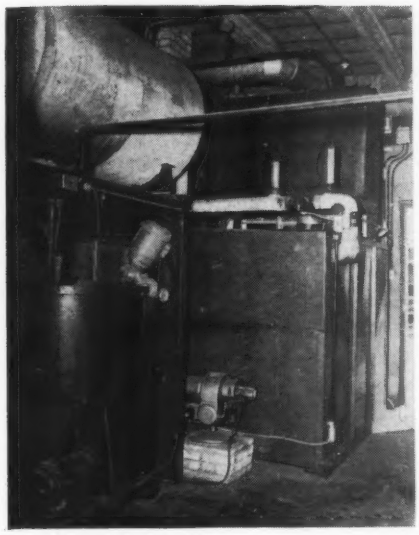
(*From page* 136)

by the small user of concrete, and this promises to be particularly true in the Chicago area where, until quite recently, even ready-mixed concrete was unobtainable. Thus for some time to come it seems likely that Bill Mussett, president of the new producing company, will have his hands full just turning out enough material to satisfy demand. Associated with him in the enterprise are V. F. Mussett, secretary-treasurer of the company, and E. A. Seideman, vice president.

NEW MACHINERY and SUPPLIES

● Circulating Oil Systems

Circulating oil systems for ready-mixed concrete plants, which send oil



at high temperatures through coil systems, are offered by Chausse Mfg. Co., Inc., 4453 Fourteenth Street, Detroit 8, Mich.

A complete unit includes an oil heater in an insulated steel housing, fired by an automatic oil conversion burner or by Chausse hand-controlled burners; a small heat-transfer oil storage tank; and an oil circulating pump. An overflow vent is provided to take care of any expansion and pressure in the system. Thermometers are included in standard equipment on outlet and return lines to the heater. Automatic controls can be furnished, if desired.

See These New Money-Makers

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● Pneumatic External Vibrator

The Model PX-6 pneumatic external vibrator, recently introduced by Viber Co. of Burbank, Calif., has been widely accepted in concrete-pipe production. Equally well suited for use in the manufacture of other concrete products, the PX-6 is also used in many packaging operations, and other applications involving the movement of dry materials in or out of bins, the unloading of hopper cars, etc.

Weighing only 40 lbs., this vibrator is 5½ in. in diameter and 12 in. long. It is adequately cooled by circulation of exhaust air through its housings and is so designed that it may be mounted at any angle.

The correct amount of amplitude is obtained through proper selection of a rotating weight, available from a wide range of sizes. Driven at the desired speed by regulating the air pressure, the PX-6 is reportedly so versatile it fulfills the requirements of external vibration problems.

The Ford Cement Block Co., 5th and Lafayette Streets, Cedar Rapids, Ia., has developed a new tamper machine which will produce two 8- by 8- by 16-in. equivalents per minute. This No. 2 Ford model has 4 tampers instead of 8. The strike-off box is hand operated and is filled by hand when it is pushed back. The mixer which completes the Ford equipped block plant is furnished with steel liners.

● Aluminum Door and Kiln

The Aluminum Products Corporation, Pontiac, Mich., has entered into a manufacturing and merchandising arrangement with Thermal Engineering, Inc., 2978 W. Davison Street, Detroit 6, Mich., to present to the concrete products industry a new door for kilns, and a new sectional kiln for block curing.

The new door, called "Thermal Door," is made entirely of aluminum. Its exclusive design, controlled by Thermal Engineering, Inc., allows for a properly proportioned flow of air between the inner and outer walls of the door itself, thereby maintaining a cool outer wall at all times when the kiln is under heat.

The Thermal door, because of its aluminum construction, is easily installed and operated. Even the largest size can be operated by one man, thus saving many man-hours and avoiding the necessity of expensive lift equipment. Each door comes equipped with all necessary operating hardware.

Because of its scientifically designed construction and cross bracing, the door should withstand abuse to a remarkable extent. Should damage occur, however, from careless operation of lift-trucks or other heavy machinery in block plants, repairs or sectional replacements are easily made.

The efficiency of Thermal doors reportedly has been proven over a three-year period. The slight heat loss occasioned by the flow of air between the inner and outer walls of the door is made up many times over because of the fewer B.t.u.'s needed to bring the inner wall of the aluminum door up to the equilibrium temperature required in the kiln. The air flow alone creates excellent insulation.

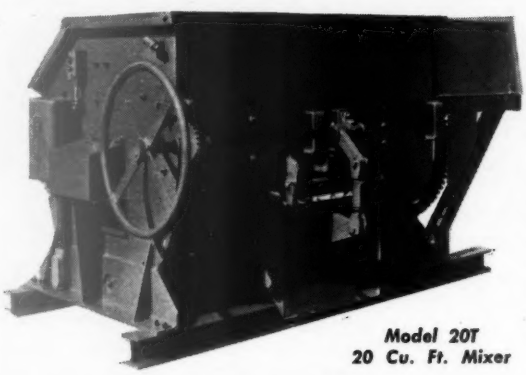
The durability, lightness, sturdiness, non-corrosiveness and self-anodyzing qualities of aluminum, together with its natural ability to reflect heat back to the products to be cured, make the Thermal aluminum door of immediate interest to all plant operations where kilns are in use.

The new Thermal kiln, made up in sections, will embody all the advantages pertaining to the Thermal door. In addition, the new kiln will make possible the increase in curing space so often needed in manufacturing plants. Because of the sectional construction, permanent kilns can be constructed, or the kiln can be used for emergency capacity. It can be quickly set up, or dismantled and stored away. Sections can be added or removed as conditions may require.

WITTEMANN MACHINERY COMPANY

(Successors to E. B. Kelley Co.)

20T CU. FT. CONCRETE MIXER



Model 20T
20 Cu. Ft. Mixer

Our other standard products are 30 cu. ft. mixers—power stripper tamping machines, air-operated, 20 and 30 cu. ft. capacity skip-loaders — conveyors — conveyor belting and chains — bucket elevators — bins — crushers — vibrating screens lift trucks — compressors and electric motors.

The Model 20T mixer, built with replaceable abrasive—resistant steel bar liners, is of the paddle-blade type, with a side-door discharge, mounted on steel skids.

The model is direct motor driven by a 10 h.p., 3-phase, 60 cycle, 220 volt motor. This motor is mounted near the top (of the mixer drum), making it more accessible.

The Model 20T mixer can also be furnished with either a clutch—pulley or gasoline engine drive, whichever is preferred.

Write for information on applications other than concrete.

WITTEMANN MACHINERY CO.

A Complete Line of Equipment for the Concrete Block-Making Industry.

FARMINGDALE, N. J. Telephone: Farmingdale 5-8011-8081

● Waterproofing Solutions

After tests over a period of 10 years Stopall Waterproofing Manufacturers, Inc., 212 Commerce Bldg., Kalamazoo, Mich., offer their product, "Stopall," a waterproofing solution consisting of a liquid carrier into which solids have been dissolved. The carrier, state the manufacturers, penetrates rapidly the surface treated and then evaporates, leaving pore-sealing solids as a permanent part of the material itself. It can be applied with a brush or a spray.

Five types of the solution are available—for concrete and masonry, concrete products, wood, leather, and textile products. Concrete masonry and concrete walls treated with Stopall can be successfully covered with oil paint.

● Entrained Air Indicator

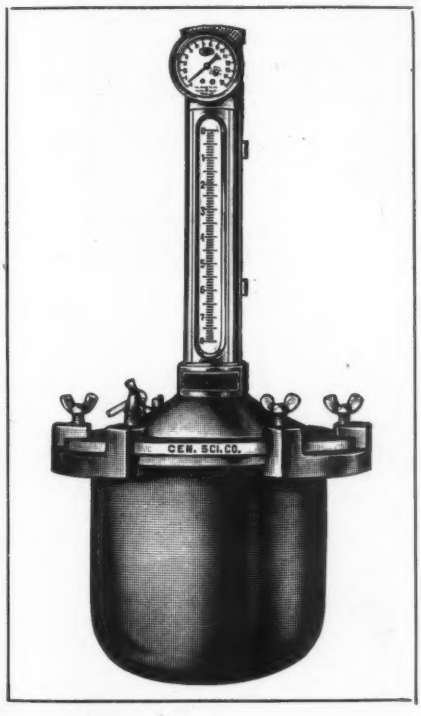
The newest Cenco development for field and laboratory use in the cement and concrete industry is the "Cenco" entrained air indicator. Recent advances

This entrained air results in a fresh concrete which is more easily worked, more homogeneous and more resistant to spalling.

The general appearance of the Cenco entrained air indicator is shown below. The indicator and accessories are stored in a stout wooden chest to facilitate transporting the equipment. The wooden chest also serves as a support for the indicator and brings it to a convenient elevation for studying the various operations under test.

The round-bottom flanged steel bowl is approximately 8 in. in diameter and 8 in. deep and has a capacity of about 0.22 cubic feet of concrete when struck off flush with the top of the flange. After placement of concrete, the cone-shaped cover is clamped to the flange of the bowl, a pressure-tight seal being obtained with a rubber gasket cemented to the flange of the cover.

The space above the concrete is then filled with water to the zero mark of the graduated glass precision-bore tube attached to the apex of the cone. Pressure, which is furnished by a small hand pump, is applied to the concrete by pumping air into the space over the



water column until the pressure gauge indicates the predetermined operation pressure. The contraction in volume of the air in the concrete with the increase in pressure is indicated by a lowering of the water level in the graduated glass tube.

The scale on this tube is graduated in inches and tenths of an inch, with the instrument so calibrated that the gross air content, h_1, is indicated in percent and tenths of a percent. When the pressure is released, the level of the water column does not immediately return to the original zero mark, but because of the penetration of water into the pores of the aggregate, remains at a level below the zero mark, as indicated by the diagram.

The apparent air content is the difference between the maximum reading h_1 and the minimum reading h_2. However, the actual entrained air content is not obtained until an aggregate correction factor is subtracted from the apparent air content to correct for the compression of air in the aggregates when water is forced into the pores by the applied pressure. This correction factor varies from about 0.15 percent to 1.0 percent of air for the natural aggregate used in concrete, depending on the porosity and moisture content of the aggregate. It is determined independently by applying the same test pressure that is applied to the concrete sample to a sample of fine and coarse aggregate in approximately the same moisture condition, amount and proportion as they occur in the concrete sample under test. Manufactured by the Central Scientific Co., Irving Park Rd., Chicago.

● Waterproofing

The American Sta-Dri Company, Brentwood, Md., features two brands of its product Sta-Dri, a composition of inorganic minerals which reportedly forms an insoluble and waterproof coating when applied to masonry surfaces.

Red Label brand, an undercoater, is used for the first coat above-grade paint on stucco, asbestos shingles, brick, poured concrete, cinder block and other masonry surfaces. Blue Label is the water-proofer and finish coat for above-grade surfaces and also for first and second coat on below-grade surfaces.

DOMINE AUTOMATIC PALLET FEEDER*

Modernize Your Present Block Machine

Why have a man handle 50 tons of steel daily when a 1/4 H.P. motor will do the same work better?

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2. You cut your lift truck operations by one-half by eliminating moving of empty racks in plant.

3. You can cube your cured blocks in front of block machine.
4. You double the life of your pallet feeder chain as only a few pallets are carried in magazine.

*Patent Applied For

DOMINE AUTOMATIC MACHINERY CORP.

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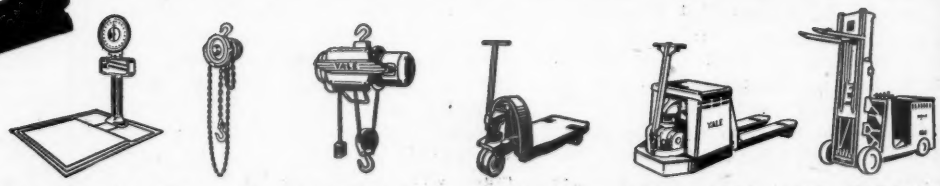

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